IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

ELECTRIC ENERGY, INC., LUMINANT GENERATION COMPANY LLC, COLETO CREEK POWER, LLC, DYNEGY MIAMI FORT, LLC, DYNEGY ZIMMER, LLC, DYNEGY MIDWEST GENERATION, LLC, ILLINOIS POWER GENERATING COMPANY, ILLINOIS POWER RESOURCES GENERATING, LLC, KINCAID GENERATION, L.L.C.	)	
Petitioners,	)	**Petition for Review**
v.	)	**Case No. 22-1056**
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY and MICHAEL S. REGAN, Administrator, United States Environmental Protection Agency	)	
Respondents.	)	

PETITION FOR REVIEW

Pursuant to Section 7006(a)(1) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6976(a), (a)(1), Federal Rule of Appellate Procedure 15, and D.C. Circuit Rule 15, Electric Energy, Inc., Luminant Generation Company LLC, Coleto Creek Power, LLC, Dynegy Miami Fort, LLC, Dynegy Zimmer, LLC, Dynegy Midwest Generation, LLC, Illinois Power Generating Company, Illinois Power Resources Generating, LLC, and Kincaid Generation, L.L.C., (collectively "Petitioners") petition the Court for review of the regulations and requirements

promulgated by the U.S. Environmental Protection Agency (EPA) that purport to revise key provisions of EPA's existing RCRA rules governing the disposal of coal combustion residuals (CCR), codified at 40 C.F.R. §§ 257.50–257.107.

These regulations and requirements were issued, without notice and comment, through a series of interrelated documents—including compliance orders addressed to regulated entities and a state permitting program, as well as proposed denials of specific project closure deadline extensions—collectively on January 11, 2022:

a) EPA News Release, "EPA Takes Key Steps to Protect Groundwater from Coal Ash Contamination" (Jan. 11, 2022) (Attachment A) (citing letters "notify[ing] facilities of their compliance obligations" and citing the Proposed Denial of Alternative Closure Deadline for General James M. Gavin Plant, Doc. No. EPA-HQ-OLEM-2021-0590-0002 (Jan. 11, 2022); the Proposed Denial of Alternative Closure Deadline for Clifty Creek Power Station, Doc. No. EPA-HQ-OLEM-2021-0587-0023 (Jan 11, 2022); and the Proposed Denial of Alternative Closure Deadline for Ottumwa Generating Station, Doc. No. EPA-HQ-OLEM-2021-0593-0002 (Jan. 11, 2022));

b) Letter from Carolyn Hoskinson, Director of the Office of Resource Conservation and Recovery, EPA Office of Land and Emergency Management to Richard E. Dunn, Director, Georgia Environmental Protection Division (Jan. 11, 2022) (Attachment B) (incorporating by reference Section

III.E.1 of the Proposed Denial of Alternative Closure Deadline for General James M. Gavin Plant, Doc. No. EPA-HQ-OLEM-2021-0590-0002 (Jan. 11, 2022));

c) Letter from Edward Nam, Director of Land, Chemicals and Redevelopment Division, EPA Region 5 to Owen R. Schwartz, Duke Energy (Jan. 11, 2022) (Attachment C);

d) Letter from Ariel Iglesias, Director of Land, Chemicals and Redevelopment Division, EPA Region 2 to Jesús Bolinaga, AES Puerto Rico (Jan. 11, 2022) (Attachment D);

e) Letter from Wendy Lubbe, Acting Director of Enforcement and Compliance Assurance Division, EPA Region 7 to Jared Morrison, Evergy Kansas Central (Jan. 11, 2022) (Attachment E);

f) Letter from Edward Nam, Director of Land, Chemicals and Redevelopment Division, EPA Region 5 to Ronald Froh, Commercial Liability Partners, et al. (Jan. 11, 2022) (Attachment F);

g) Proposed Denial of Alternative Closure Deadline for General James M. Gavin Plant, Doc. No. EPA-HQ-OLEM-2021-0590-0002 (Jan. 11, 2022) (Attachment G);

h) Proposed Denial of Alternative Closure Deadline for Clifty Creek Power Station, Doc. No. EPA-HQ-OLEM-2021-0587-0023 (Jan 11, 2022) (Attachment H);

i) Proposed Denial of Alternative Closure Deadline for Ottumwa Generating Station, Doc. No. EPA-HQ-OLEM-2021-0593-0002 (Jan. 11, 2022) (Attachment I);

j) Proposed Conditional Approval of an Alternative Closure Deadline for H.L. Spurlock Power Station, Maysville, Kentucky, Doc. No. EPA-HQ-OLEM-2021-0595-0002 (Jan. 11, 2022) (Attachment J).

Dated: April 8, 2022

Respectfully submitted,

s/ P. Stephen Gidiere III
P. Stephen Gidiere III
Julia B. Barber
BALCH & BINGHAM LLP
1901 6th Ave. N., Ste. 1500
Birmingham, Alabama 35203
205-251-8100
sgidiere@balch.com

Stephanie Zapata Moore
Executive Vice President & General Counsel
Daniel J. Kelly
Senior Vice President & Deputy General Counsel
David W. Mitchell
Senior Counsel, Environmental
VISTRA CORP.
6555 Sierra Drive
Irving, Texas 75039

Joshua R. More
ARENTFOX SCHIFF LLP
233 South Wacker Drive, Ste. 7100
Chicago, IL 60606
312-258-5500
joshua.more@afslaw.com

Michael L. Raiff
GIBSON, DUNN & CRUTCHER LLP
2001 Ross Ave., Ste. 2100
Dallas, TX 75201
214-698-3100
mraiff@gibsondunn.com

Helgi C. Walker
David Fotouhi
GIBSON, DUNN & CRUTCHER LLP
1050 Connecticut Avenue, N.W.
Washington, DC 20036
202-955-8500
hwalker@gibsondunn.com
dfotouhi@gibsondunn.com

Counsel for Petitioners Electric Energy, Inc., Luminant Generation Company LLC, Coleto Creek Power, LLC, Dynegy Miami Fort, LLC, Dynegy Zimmer, LLC, Dynegy Midwest Generation, LLC, Illinois Power Generating Company, Illinois Power Resources Generating, LLC, and Kincaid Generation, L.L.C.

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

ELECTRIC ENERGY, INC., LUMINANT GENERATION COMPANY LLC, COLETO CREEK POWER, LLC, DYNEGY MIAMI FORT, LLC, DYNEGY ZIMMER, LLC, DYNEGY MIDWEST GENERATION, LLC, ILLINOIS POWER GENERATING COMPANY, ILLINOIS POWER RESOURCES GENERATING, LLC, KINCAID GENERATION, L.L.C.	)	
Petitioners,	)	**Case No. ____________**
v.	)	
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY and MICHAEL S. REGAN, Administrator, United States Environmental Protection Agency	)	
Respondents.	)	

RULE 26.1 CORPORATE DISCLOSURE STATEMENT

Pursuant to Federal Rule of Appellate Procedure 26.1 and D.C. Circuit Rule 26.1, Electric Energy, Inc., Luminant Generation Company LLC, Coleto Creek Power, LLC, Dynegy Miami Fort, LLC, Dynegy Zimmer, LLC, Dynegy Midwest Generation, LLC, Illinois Power Generating Company, Illinois Power Resources Generating, LLC, and Kincaid Generation, L.L.C. submit the following corporate disclosure statement:

Electric Energy, Inc. is a wholly owned subsidiary of Illinois Power Generating Company, an Illinois corporation, which in turn is a wholly owned subsidiary of Illinois Power Resources, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of IPH, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Operations Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Intermediate Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Corp., a publicly held corporation incorporated under the laws of Delaware.

Luminant Generation Company LLC and Coleto Creek Power, LLC are wholly owned subsidiaries of Vistra Asset Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Operations Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Intermediate Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Corp., a publicly held corporation incorporated under the laws of Delaware.

Dynegy Miami Fort, LLC and Dynegy Zimmer, LLC are wholly owned subsidiaries of Dynegy Coal Generation, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Dynegy Commercial Asset Management, LLC, an Ohio limited liability company, which in turn is a wholly

owned subsidiary of Vistra Operations Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Intermediate Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Corp., a publicly held corporation incorporated under the laws of Delaware.

Dynegy Midwest Generation, LLC is a wholly owned subsidiary of Dynegy Coal HoldCo, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Operations Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Intermediate Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Corp., a publicly held corporation incorporated under the laws of Delaware.

Illinois Power Generating Company and Illinois Power Resources Generating, LLC are wholly owned subsidiaries of Illinois Power Resources, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of IPH, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Operations Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Intermediate Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Corp., a publicly held corporation incorporated under the laws of Delaware.

Kincaid Generation, L.L.C. is a wholly owned subsidiary of Dynegy Resources Generating HoldCo, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of EquiPower Resources Corp., a Delaware corporation, which in turn is a wholly owned subsidiary of Dynegy Resources II, LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Operations Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Intermediate Company LLC, a Delaware limited liability company, which in turn is a wholly owned subsidiary of Vistra Corp., a publicly held corporation incorporated under the laws of Delaware.

Vistra Corp. is publicly traded on the NYSE under the symbol "VST." To Petitioners' knowledge, except for Brookfield Asset Management Inc. and The Vanguard Group, Inc., in each case together with their respective affiliates and managed entities, there are no publicly traded corporations that own more than 10% of Vistra Corp.'s stock.

Dated: April 8, 2022

Respectfully submitted,

s/ P. Stephen Gidiere III
P. Stephen Gidiere III
BALCH & BINGHAM LLP
1901 6th Ave. N., Ste. 1500
Birmingham, Alabama 35203

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused the foregoing Petition for Review and Rule 26.1 Corporate Disclosure Statement to be served by first-class mail, postage prepaid, on April 8, 2022, upon the following:

Merrick B. Garland
Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530

Correspondence Control Unit
U.S. Environmental Protection Agency
Office of General Counsel (2311)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Todd Sunhwae Kim
Assistant Attorney General
U.S. Department of Justice
Environment and Natural Resources Division
950 Pennsylvania Avenue, NW
Washington, DC 20530

Michael S. Regan
Administrator
U.S. Environmental Protection Agency
Office of the Administrator (1101A)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dated: April 8, 2022

s/ P. Stephen Gidiere III
P. Stephen Gidiere III
Counsel for Petitioners

Attachment A

United States Environmental Protection Agency

MENU

Search EPA.gov

News Releases: Headquarters <https://www.epa.gov/newsreleases/search/press_office/headquarters-226129> | **Land and Emergency Management (OLEM)** <https://www.epa.gov/newsreleases/search/press_office/land-and-emergency-management-olem-226153>

CONTACT US <https://www.epa.gov/newsreleases/forms/contact-us>

EPA Takes Key Steps to Protect Groundwater from Coal Ash Contamination

January 11, 2022

Contact Information
EPA Press Office (press@epa.gov)

Today, the U.S. Environmental Protection Agency (EPA) is taking several actions to protect communities and hold facilities accountable for controlling and cleaning up the contamination created by decades of coal ash disposal. Coal combustion residuals (CCR or coal ash), a byproduct of burning coal in coal-fired power plants, contains contaminants like mercury, cadmium, and arsenic that without proper management can pollute waterways, groundwater, drinking water, and the air.

Today's actions advance the agency's commitment to protecting groundwater from coal ash contamination and include (1) proposing decisions on requests for extensions to the current deadline for initiating closure of unlined CCR surface impoundments; (2) putting several facilities on notice regarding their obligations to

comply with CCR regulations and (3) laying out plans for future regulatory actions to ensure coal ash impoundments meet strong environmental and safety standards. EPA is committed to working with states to ensure robust protections for communities.

“I’ve seen firsthand how coal ash contamination can hurt people and communities. Coal ash surface impoundments and landfills must operate and close in a manner that protects public health and the environment,” **said EPA Administrator Michael S. Regan.** “For too long, communities already disproportionately impacted by high levels of pollution have been burdened by improper coal ash disposal. Today’s actions will help us protect communities and hold facilities accountable. We look forward to working with our state partners to reverse damage that has already occurred. EPA will support communities with stakeholder engagement, technical assistance, compliance assistance, and enforcement.”

“New York State applauds the Biden administration and U.S. EPA Administrator Michael Regan for acting to protect communities nationwide from the dangers posed by coal ash disposal. The efforts announced today will help safeguard our communities and natural resources, and send a clear message—regulators are rigorously monitoring coal ash facilities and ready to hold violators accountable,” said **New York State Department of Environmental Conservation (DEC) Commissioner Basil Seggos**. “DEC is committed to partnering with EPA to protect our communities from the reckless practices of our country’s lingering coal legacy and today’s announcement is a critical milestone in these efforts.”

“As the transition from coal advances, it is also critical that we responsibly manage the legacy wastes that have been left from our historical reliance on coal,” said **Liesl Clark, Director of the Michigan Department of Environment, Great Lakes, and Energy (EGLE)**. “Michigan is advancing efforts to reach our state’s goal of a carbon-neutral economy by 2050. We support EPA’s ongoing efforts to provide clarity around the coal combustion residuals rules and to ensure that our world-class freshwater resources and the drinking water they provide are not impacted by these legacy wastes.”

Addressing Requests for Extensions to CCR Surface Impoundment Closure Deadlines

EPA's regulations required most of the approximately 500 unlined coal ash surface impoundments nationwide to stop receiving waste and begin closure by April 2021. The regulations outlined a process for facilities to apply for two types of extensions to the closure deadline.

EPA received and reviewed 57 applications from CCR facilities requesting deadline extensions and determined 52 were complete, four were incomplete, and one is ineligible for an extension. Of the 52 complete applications received, EPA conducted technical analyses and is proposing determinations on four applications today, with more determinations planned in the coming months.

EPA is proposing denying three requests for deadline extensions after identifying several potential deficiencies with groundwater monitoring, cleanup, and closure activities, including a lack of monitoring wells, improper monitoring techniques, faulty identification of other sources of groundwater contamination, and insufficient evaluations of clean-up technologies, which could prevent adequate groundwater cleanup. EPA is proposing a conditional approval for one request, which would require the facility to fix groundwater monitoring issues.

In addition, the proposed determinations re-state EPA's consistently held position that surface impoundments or landfills cannot be closed with coal ash in contact with groundwater. Limiting the contact between coal ash and groundwater after closure is critical to minimizing releases of contaminants into the environment and will help ensure communities near these facilities have access to safe water for drinking and recreation.

Bringing Facilities into Compliance

EPA is also taking action to notify facilities of their compliance obligations for several facilities where the agency has information concerning the possible presence of issues that could impact health and the environment. Concerns outlined in separate letters include improper groundwater monitoring, insufficient cleanup information, and the regulation of inactive surface impoundments. EPA is also ensuring facilities comply with the current CCR regulations by working with state partners to investigate compliance concerns at coal ash facilities across the country.

EPA will work in collaboration with states on facility compliance to protect public health and the environment. The agency will focus on compliance at facilities that intend to close surface impoundments with coal ash in contact with groundwater, and facilities with surface impoundments that warrant further groundwater investigation, including facilities that have used an alternate source demonstration, which is when a facility identifies another possible source of contamination. Closure with coal ash in contact with groundwater puts the health and safety of nearby communities at risk.

Future Regulatory Efforts

Moving forward, EPA will improve the current rules by finalizing a federal permitting program for the disposal of coal ash and establishing regulations for legacy coal ash surface impoundments. EPA will also continue its review of state-level CCR program applications to ensure they are as protective as federal regulations.

Background

Produced primarily from the burning of coal in coal-fired power plants, coal combustion residuals can contain harmful levels of contaminants and are one of the largest types of industrial waste generated in the United States. In April 2015, EPA promulgated a comprehensive set of requirements for the management of coal ash in landfills and impoundments. These regulations address the risks from coal ash disposal.

EPA is requesting public comment for 30 days on the proposed determinations through Regulations.gov. For a list of the individual determinations and how to comment, please visit: https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-implementation <https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-implementation>.

For more information about coal ash, visit: https://www.epa.gov/coalash <https://www.epa.gov/coalash>.

Contact Us <https://www.epa.gov/newsreleases/forms/contact-us> to ask a question, provide feedback, or report a problem.

Discover.

Accessibility <https://www.epa.gov/accessibility>

Budget & Performance <https://www.epa.gov/planandbudget>

Contracting <https://www.epa.gov/contracts>

EPA www Web Snapshot <https://www.epa.gov/utilities/wwwepagov-snapshots>

Grants <https://www.epa.gov/grants>

No FEAR Act Data <https://www.epa.gov/ocr/whistleblower-protections-epa-and-how-they-relate-non-disclosure-agreements-signed-epa-employees>

Plain Writing <https://www.epa.gov/web-policies-and-procedures/plain-writing>

Privacy <https://www.epa.gov/privacy>

Privacy and Security Notice <https://www.epa.gov/privacy/privacy-and-security-notice>

Connect.

Data.gov EXIT EXIT <https://www.data.gov/>

Inspector General <https://www.epa.gov/office-inspector-general/about-epas-office-inspector-general>

Jobs <https://www.epa.gov/careers>

Newsroom <https://www.epa.gov/newsroom>

Open Government <https://www.epa.gov/data>

Regulations.gov EXIT EXIT <https://www.regulations.gov/>

Subscribe <https://www.epa.gov/newsroom/email-subscriptions-epa-news-releases>

USA.gov EXIT EXIT <https://www.usa.gov/>

White House EXIT EXIT <https://www.whitehouse.gov/>

Ask.

Contact EPA <https://www.epa.gov/home/forms/contact-epa>

EPA Disclaimers <https://www.epa.gov/web-policies-and-procedures/epa-disclaimers>

Hotlines <https://www.epa.gov/aboutepa/epa-hotlines>

FOIA Requests <https://www.epa.gov/foia>

Frequent Questions <https://www.epa.gov/home/frequent-questions-specific-epa-programstopics>

Follow.

LAST UPDATED ON JANUARY 11, 2022

Attachment B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

January 11, 2022

OFFICE OF
LAND AND EMERGENCY
MANAGEMENT

Mr. Richard E. Dunn
Director
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive
Suite 1456, East Tower
Atlanta, Georgia 30334

Re: Georgia Coal Combustion Residuals Permit Program

Dear Mr. Dunn:

Thank you for meeting with us yesterday in advance of the announcement about the actions the Agency is taking to advance EPA's commitment to protecting groundwater from CCR contamination. Today, the U.S. Environmental Protection Agency (EPA) explained portions of the CCR regulations regarding the closure performance standards at 40 Code of Federal Regulations (CFR) § 257.102(d) applicable to CCR surface impoundments and landfills. Specifically, EPA explained how these performance standards apply in situations where waste in the closing CCR unit is in contact with groundwater. You can find our explanation in EPA's proposed denial notice of Gavin Power LLC's extension request pursuant to 40 C.F.R. § 257.103(f)(1). The closure discussion is in Section III.E.1 of the proposed decision, which can be found at *https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-implementation.*

We appreciate the continued dialogue between EPA's CCR Program and the Georgia Environmental Protection Division (EPD) to continue to work together on these issues. For example, on June 3, 2021, EPA and EPD met to discuss the closure-in-place performance standards codified in the CCR regulations. The primary topic of discussion was to hear from EPD how they were interpreting and applying the closure performance standards in the permitting of CCR facilities/units in Georgia.

Giving consideration to the closure discussion provided in the proposed action for Gavin Power LLC, EPA is requesting that EPD review its pending and issued CCR permits to determine whether the permits are consistent with this explanation and whether they need to be modified or reissued. We understand that EPD may need some time to complete this review. EPA is proposing to meet the week of January 24, 2022 to discuss the results of your review and we will reach out to you to confirm the details of the virtual meeting.

EPA is committed to working with EPD to ensure that CCR permits address all applicable requirements and are consistent with the federally approved Georgia CCR Permit Program. If you have any questions or wish to discuss this further, please contact Richard Huggins of my

staff, in EPA's Office of Resource Conservation and Recovery at Huggins.Richard@epa.gov or at (202) 566-0543.

Sincerely,

Carolyn Hoskinson, Director
Office of Resource Conservation and Recovery

cc: Mr. John Eunice
Deputy Director, Georgia Department of Natural Resources
Mr. Chuck Mueller
Branch Chief, Georgia Department of Natural Resources
Mr. William Cook
Program Manager, Georgia Department of Natural Resource
Mr. Casey Katims
Deputy Associate Administrator for Intergovernmental Relations, EPA
Mr. Daniel Blackman
Regional Administrator, EPA Region 4
Mr. John Blevins
Associate Regional Administrator, EPA Region 4
Mr. Cesar Zapata
Director, Land Chemicals and Redevelopment Division, EPA Region 4
Mr. Ramon Torres
Deputy Director, Land Chemicals and Redevelopment Division, EPA Region 4
Ms. Meredith Anderson
Branch Chief, EPA Region 4
Ms. Carol Kemker
Director, Enforcement and Compliance Assurance Division, EPA Region 4
Ms. Dee Rodgers-Smith
Section Chief, Land Chemicals and Redevelopment Division, EPA Region 4
Mr. David Egetter
Section Chief, Land Chemicals and Redevelopment Division, EPA Region 4
Mr. Andy Crossland
Director, Materials Recovery and Waste Management Division, Office of Resource Conservation and Recovery
Mr. Richard Huggins
Chief, Energy Recovery and Waste Disposal Branch, Office of Resource Conservation and Recovery

Attachment C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
L-17J

Mr. Owen R. Schwartz
Duke Energy
1000 East Main Street
Plainfield, Indiana 46168

Dear Mr. Schwartz,

This letter provides written confirmation of the discussion between the Environmental Protection Agency (EPA) and Duke Energy Gallagher staff during our conference calls on August 27 and September 17, 2021 regarding the history of the site and the closure of Coal Combustion Residuals (CCR) surface impoundments at Duke Energy's Gallagher Generating Station in New Albany, Indiana. This letter also serves to notify you that, based on the information provided in those telephone conversations, EPA has concluded that the North Ash Pond and the Primary Pond Ash Fill Area are subject to the requirements of 40 C.F.R. Part 257 Subpart D ("the CCR Regulations").

On the August 27 conference call, Duke Energy stated that two impoundments (i.e., North Ash Pond, Primary Pond Ash Fill Area) were removed from service, drained of ponded surface water, and subsequently covered with soil and grass in 1989. Further, EPA's understanding is that Duke has taken no engineering measures to remove any of the groundwater from either unit and both of these unlined units are sitting in approximately 20 feet of groundwater.

As an initial matter, we disagree with Duke Energy's argument that neither of these units are CCR surface impoundments within the meaning of the CCR Regulations. We understand that you interpret the definition of a CCR surface impoundment to exclude units such as the North Ash Pond, where liquid remains in the unit because the base of the unit intersects with groundwater. You argue that such units do not "hold" liquid because groundwater flows through the unit (instead of staying within the unit). EPA disagrees with your interpretation. The definition of a CCR surface impoundment does not require that the unit prevent groundwater from flowing through the unit, but merely requires that the unit be "designed to hold an accumulation of CCR and liquid." 40 C.F.R. § 257.53. Following your interpretation would lead to the incongruous result that impoundments where contaminants can migrate out in the groundwater would not be regulated by the CCR Regulations, while those that prevent that type of migration would be regulated.

Primary Pond Ash Fill Area

The Primary Pond Ash Fill Area is not an existing CCR surface impoundment because (to EPA's knowledge) it has not received CCR after October 19, 2015. However, because it still contains CCR and liquids, it meets the definition of an inactive CCR surface impoundment. An inactive CCR surface impoundment is one "that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015." EPA interprets the word "contains" to mean "to have or hold (someone or something) within" based on the ordinary meaning of the word. (e.g., Oxford English Dictionary, Merriam-Webster). Accordingly, an impoundment "contains" liquid if there is liquid in the impoundment, even if the impoundment does not prevent the liquid from migrating out of the impoundment. This means that if a CCR surface impoundment contains liquid because its base (or any part of its base) is in contact with groundwater, it would meet the definition of an inactive CCR surface impoundment. Under both the regulatory and dictionary definitions of the term, groundwater (or water) falls within the plain meaning of a "liquid." See 40 C.F.R. 257.53. Therefore, because the Primary Pond Ash Fill Area is sitting in approximately 20 feet of groundwater, it holds or contains liquids and is an inactive surface impoundment.

As an inactive CCR surface impoundment, the Primary Pond Ash Fill Area is regulated pursuant to 40 C.F.R. § 257.50(c), which specifies that "[t]his subpart also applies to inactive CCR surface impoundments at active electric utilities or independent power producers, regardless of the fuel currently used at the facility to produce electricity."

North Ash Pond

On the September call, Duke Energy confirmed that the North Ash Pond has received CCR after the October 19, 2015 effective date of the CCR Rule. Therefore, that pond meets the definition of an existing CCR surface impoundment. An existing CCR surface impoundment is one that "receives CCR both before and after October 19, 2015." 40 C.F.R. § 257.53. Accordingly, the North Ash Pond falls within the ambit of 40 C.F.R. § 257.50(b), which specifies that "[t]his subpart applies to owners and operators of…existing CCR surface impoundments…that dispose or otherwise engage in solid waste management of CCR." Even if the North Ash Pond had not received CCR after October 19, 2015, it would be an inactive CCR surface impoundment for the same reasons that the Primary Pond Ash Fill Area is an inactive CCR surface impoundment and would fall within the ambit of 40 C.F.R. § 257.50(c).

Applicability of the Closure Requirements to these Impoundments

For the reasons set out in the discussion above, the North Ash Pond and Primary Pond Ash Fill Area are regulated under 40 C.F.R. Part 257 Subpart D and Duke Energy will need to take action to bring these ponds into compliance by meeting all the requirements of the regulations. Significant among these is the requirement to close, because the North Ash Pond and the Primary Pond Ash Fill Area are unlined CCR surface impoundments. See, 40 C.F.R. § 257.101(a).

The applicable closure regulations are those that address closing with waste in place (assuming EPA's understanding is correct that Duke Energy's plan is to close both impoundments with waste in place). The Part 257 requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. The general performance standards

under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i).

If Duke Energy plans to close with waste in place and the base of the impoundment does, in fact, intersect with groundwater, Duke Energy will need to implement engineering measures to remove groundwater from the unit prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the free-standing liquid in the impoundment and to all separable porewater in the impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater. The regulation does not differentiate between the sources of the liquid in the impoundment (e.g., surface water infiltration, sluice water intentionally added, groundwater intrusion). Furthermore, the performance standard at 40 C.F.R. § 257.102(d)(2)(i) was modeled on the regulations that apply to interim status hazardous waste surface impoundments, which are codified at 40 C.F.R. § 265.228(a)(2)(i). Guidance on these interim status regulations clarifies that these regulations require both the removal of free-standing liquids in the impoundment as well as sediment dewatering. See US EPA publication titled "Closure of Hazardous Waste Surface Impoundments," publication number SW-873, September 1982.

Similarly, Duke Energy will need to ensure that the impoundments are closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the sides and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. This contact between the waste and groundwater provides a potential for waste constituents to be dissolved and to migrate out of (or away from) the closed unit that is similar to infiltration from above. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit.

Finally, because the North Ash Pond and the Primary Pond Ash Fill Area must close pursuant to 40 C.F.R. § 257.101(a), any further receipt of CCR into those units is prohibited. EPA also made this clear in the preamble to the March 15, 2018 proposed rule (83 FR 11605) where EPA stated:

> The current CCR rules require that certain units must close for cause, as laid forth in § 257.101(a)–(c). As written, the regulation expressly prohibits ''placing CCR'' in any units required to close for-cause pursuant to § 257.101.…Note that the rule does not distinguish between placement that might be considered beneficial use and placement that might be considered disposal. All further placement of CCR into the unit is prohibited once the provisions of § 257.101 are triggered.

If you have any questions about the information provided in this letter or if you have additional information that you would like EPA to consider, you may contact Angela Mullins at mullins.angela@epa.gov. Alternatively, Duke Energy counsel can contact Laurel Celeste at celeste.laurel@epa.gov in EPA's Office of General Counsel for any questions on the Agency's position set forth in the letter.

Sincerely,

Edward Nam
Director
Land, Chemicals and Redevelopment Division

cc: Peggy Dorsey,
Assistant Commissioner
Office of Land Quality
Indiana Department of Environmental Management

Attachment D

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

January 11, 2022

Mr. Jesús Bolinaga
AES Puerto Rico
P.O. Box 1890
Guayama, Puerto Rico 00785

Dear Mr. Bolinaga:

This letter provides written confirmation of the discussion between the Environmental Protection Agency (EPA or Agency) and AES Puerto Rico (AES) staff during our conference call on October 1, 2021, regarding the coal combustion residuals (CCR) landfill liner project at the AES Puerto Rico power plant. Prior to that call, EPA had reviewed the report regarding the CCR landfill remedy titled *"Environmental Assessment- AGREMAX Staging Area Liner Project"* (referred herein as the "Report") and the file titled *"AES-PR Guayama Pre-Consultation Figures Appendices"* (referred herein as the "Appendices").[1]

On April 13, 2021, an Administrative Complaint was filed with the Permits Management Office, Puerto Rico Department of Economic Development and Commerce by Ms. Ruth Santiago of Comité Diálogo Ambiental, Inc. and Earthjustice on behalf of nine public interest groups in Puerto Rico. EPA has also reviewed this Administrative Complaint and associated materials.

After reviewing the Report, Appendices and the Administrative Complaint, EPA identified several concerns regarding the selected remedy. On the October 1 call, EPA raised those concerns that pertain to the synthetic liner that AES has determined would be part of its remedy. Because the liner will be the component of the remedy to control the source(s) of releases, it is imperative that the liner and installation are effective in eliminating, to the maximum extent feasible, further releases of constituents from the landfill to the environment.

Specifically, on the October 1 call EPA raised the following issues with the proposed liner design based on information available in the Report and the Appendices:

1. **Compatibility.** Although the Report provides geosynthetic clay liner (GCL) compatibility analysis results for bottom ash, fly ash and synthetic gypsum, it does not appear to provide results for AGREMAX.[2] EPA raised the concern that the leaching characteristics of the individual CCR wastes may not be representative of AGREMAX.
2. **Decontamination plan**. The documents do not include details about the CCR removal procedures, nor any tests/inspections that AES plans to implement to ensure the removal of all

[1] Prior to reviewing these documents, the EPA reviewed the report titled *Report on Corrective Measures Assessment AES Puerto Rico-AGREMAX Staging Area, Guayama, Puerto Rico*, dated September 2019 and subsequently amended on November 8, 2019. EPA provided comments on that report in a letter dated March 5, 2020.
[2] PDF page 19 of the Appendices document.

the CCR and contaminated media before the subgrade preparation for the liner installation. EPA raised the concern that CCR, if left in place below the proposed liner, could continue to impact groundwater quality after liner installation.

3. **Proposed leachate collection and management plan**. EPA raised the concern that the documents do not provide sufficient information on the operation of the leachate collection system for the CCR landfill or the plan to manage collected leachate.
4. **Historical groundwater elevation data**. EPA raised the concern that the GCL performance may be impacted by contact with groundwater with elevated levels of various constituents (e.g., calcium). EPA stated that an assessment of the seasonal fluctuation and groundwater elevation at the site is important to evaluate whether groundwater would likely contact the proposed liner system.

In response, on October 7, 2021, Ms. Angelique Collier of AES submitted additional information to EPA consisting of groundwater elevation data, leachate collection management specifications, and the verification methodology for AGREMAX removal. The email also indicated some information was still forthcoming on the compatibility analysis.

After reviewing the information submitted by AES, on October 20, 2021, EPA sent an email to AES requesting additional information on the following:

- **Groundwater data**. EPA requested AES provide the modeling method(s), inputs, and results to assess the appropriateness of the established seasonal high groundwater elevations and asked several questions regarding various groundwater elevation data. EPA also requested that AES consider conducting a GCL compatibility evaluation with respect to groundwater quality if any part of the GCL is expected to have an intermittent or recurring connection with the groundwater.
- **Sump detail**. EPA requested AES provide a cross-section of the bottom liner depicting the proposed double liner configuration.
- **Hydraulic conductivity of proposed liner**. EPA requested that AES provide a calculation package demonstrating that the proposed GCL (based on the GCL hydraulic conductivity measured using AGREMAX leachate) is hydraulically equivalent to a 2-feet thick compacted clay liner with a max hydraulic conductivity of 10^{-7} cm/sec.
- **Leachate disposal**. AES plans to pump landfill leachate to the coal pile run-off pond and from there to the onsite wastewater treatment plant. AES indicated that the coal pile run-off pond is lined. The performance of the coal pile run-off pond liner system impacts the efficacy of the proposed corrective measure to address ongoing groundwater exceedances. EPA requested AES to provide coal pile run-off pond liner design details.

On October 26, 2021, AES submitted a letter written by Oasis Consulting Services, PR, LLC that included attachments from Colloid Environmental Technologies Company, LLC (CETCO), among others, providing information related to the compatibility of the groundwater and AGREMAX with the various geosynthetics that AES is proposing for the liner. Specifically, a discussion about the compatibility of geomembrane, geocomposite and GCL were provided. The submittal did not include the GCL compatibility test results with respect to AGREMAX. CETCO committed to provide these data to AES when they become available. Furthermore, the submittal does not provide the thickness of the proposed GCL at the design overburden pressure which is needed to verify the GCL equivalency.

On November 5, 2021, AES submitted additional information responding to some of the questions raised by EPA on October 20. Specifically, AES provided the following information:

- **Groundwater data**. AES provided information describing how the seasonal high groundwater elevations were determined. In addition, AES responded to EPA's question about the compatibility of the liner with groundwater. AES explained that intermittent or recurring contact between the new liner system and groundwater will not occur based on the conservative approach of the design.
- **Sump detail**. AES provided a cross-section of the bottom liner depicting the proposed double liner configuration.
- **Leachate disposal**. AES provided design details for the coal pile run-off pond liner.
- **Hydraulic conductivity of proposed liner**. AES's submission did not include a calculation package demonstrating that the proposed GCL (based on the GCL hydraulic conductivity measured using AGREMAX leachate) is hydraulically equivalent to a 2-feet thick compacted clay liner with a max hydraulic conductivity of 10^{-7} cm/sec as requested by EPA on October 20. On October 26, AES-PR provided calculations demonstrating the proposed GCL is hydraulically equivalent to a 2-feet thick compacted clay liner; however, these calculations are based on GCL hydraulic conductivity values that are not measured or derived using AGREMAX leachate.

At this time, since we have not been given the requested information on the compatibility and hydraulic conductivity mentioned above, we cannot determine that the liner will be effective in preventing AGREMAX from contaminating the groundwater.

EPA also has concerns regarding the assessment and selection of monitored natural attenuation (MNA) as the other component of AES' chosen remedy. Page iii of the Assessment of Corrective Measures (ACM) claims that all remedies in the ACM meet the requirements of 40 C.F.R. § 257.97(b)(1) to be protective of human health and the environment, and they all assess equally for all assessment criteria in 40 C.F.R. §§ 257.96(c) and 257.97(c) "…because no adverse risk currently exists, any of the remedies considered herein are all protective of human health and the environment, and implementation of any of the remedial alternatives will not result in a meaningful reduction in risk to groundwater-related exposures or risk." This is inconsistent with the requirements in the CCR regulations that contamination above the regulatory standard in groundwater must be cleaned up in corrective action. "EPA's longstanding and consistent policy across numerous regulatory programs has been that groundwater contamination is a significant concern that merits regulatory action in its own right, whether or not the aquifer is not currently used as a source of drinking water." (80 FR 21455, April 17, 2015).

The ACM does not contain site-specific evidence to support the assessment of MNA with respect to the released constituents (lithium, molybdenum, selenium) at AES. In order to conduct the assessment according to criteria in 40 C.F.R. § 257.96(c), evaluation of MNA as a corrective measure requires analysis of site-specific data and characteristics that control and sustain any naturally occurring attenuation. It is necessary to know what specific mechanism (e.g., sorption or reduction and oxidation reaction) is responsible for the attenuation so that the mechanism can be evaluated, considering factors such as attenuation capacity of the aquifer and stability of the mechanism. Changes in a contaminant's concentration or chemical speciation or in geochemical parameters (e.g., pH, oxidation and reduction potential) may reduce the occurrence of or the stability of a naturally occurring attenuation mechanism at AES and result in additional releases to the environment. Determining the occurrence and demonstrating the success and irreversibility of MNA mechanisms is necessary to assess the performance, reliability, ease of implementation, and the time required to complete the remedy. See 40

C.F.R. § 257.96 (c)(1) and (c)(2). This information would ultimately be necessary to show that MNA meets the requirements of 40 C.F.R. § 257.97(b). For more information about MNA and inorganic metals in groundwater, see the EPA guidance document "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015 ("2015 MNA Guidance").

Inorganic contaminants persist in the subsurface because, except for radioactive decay, they are not degraded by the other natural attenuation processes. In other words, the released constituents at AES are atoms, and atoms do not break down or degrade through any naturally occurring process unless they are radioactive.[3] Often, however, inorganic contaminants may exist in forms that have low mobility, toxicity, or bioavailability such that they pose a relatively low level of risk. Therefore, natural attenuation of inorganic contaminants is most applicable to sites where immobilization is demonstrated to be in effect and the process/mechanism is irreversible.[4]

The ACM discusses MNA mechanisms that are not applicable to the released constituents at AES (e.g., volatilization, transformation, destruction) because they are inorganic metals and do not behave in this way. No specific mechanisms occurring at AES are identified in the ACM or Remedy Selection Report, and no data are presented to confirm that any are occurring, other than dilution and dispersion. Dilution and dispersion reduce concentrations through dispersal of contaminant mass rather than destruction or immobilization of contaminant mass.[5] Consequently, these mechanisms do not meet the requirement at 40 C.F.R. § 257.97(b)(4) to remove from the environment as much of the contaminated material as is feasible, and they may not meet the requirement at 40 C.F.R. § 257.97(b)(1) to be protective of human health and the environment. Note that this is also consistent with EPA's long-standing policy that dilution and dispersion are generally not appropriate as primary MNA mechanisms[6].

While MNA can reduce the aqueous concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils, it does not remove the contaminants from the environment. MNA, therefore, would not be assessed favorably in either the ACM or any remedy selection report with respect to 40 CFR § 257.97(b)(4), which requires that remedies "remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible." Immobilization that is not permanent would be assessed differently than permanent immobilization and would also require ongoing monitoring in accordance with 40 C.F.R. § 257.98(a)(1) as long as immobilized constituents remain in the aquifer matrix.

None of this analysis is provided in the discussion of MNA in the ACM. The ACM identifies no specific immobilization mechanisms and contains no data to support the occurrence of either permanent or reversible immobilization of molybdenum, lithium and selenium at AES Puerto Rico. The ACM assesses MNA favorably under various criteria without providing any site-specific data, gathered in the characterization required by 40 C.F.R. § 257.95(g)(1), to support the assessment. EPA believes the discussion of MNA in the ACM is insufficient to support its selection or to meet the requirements of 40 CFR § 257.96.

[3] This is in contrast to organic compounds, comprised of multiple elements, which may react or degrade to their constituent elements and could form other, less harmful compounds.
[4] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 9
[5] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14
[6] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14

Also, EPA notes that AES has not provided groundwater flow rate or direction of flow, laboratory analytical reports, statistical analyses, or any detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, normality test results) in the Annual Groundwater Monitoring and Corrective Action (GWMCA) Reports. As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3).

The purpose of the Annual GWMCA Report is to provide the most recently obtained groundwater information as well as to allow review for compliance with the requirements. The groundwater monitoring provisions in 40 C.F.R. §§ 257.90 through 257.95 include numerous requirements (e.g., standards for lowest achievable quantitation limits, requirement to analyze samples for total recoverable metals, performance standards for various statistical methods). It is the owner or operator's responsibility to demonstrate that they are in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents the EPA, states, or other stakeholders from evaluating compliance.

Based on these deficiencies and lack of required details, we look forward to AES' response addressing them in the near future. Likewise, we look forward to a discussion on your selection of MNA as a part of your remedy. If you have any questions please contact Mr. Dale Carpenter, Chief of EPA Region 2's Sustainable Materials Management Section, at (212) 637-4110 to discuss any questions you may have about the comments provided herein.

Sincerely,

Ariel Iglesias, Director
Land, Chemicals and Redevelopment Division

Attachment E

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

SENT BY ELECTRONIC MAIL
RECEIPT CONFIRMATION REQUESTED
jared.morrison@evergy.com

Mr. Jared Morrison
Director, Water and Waste Programs
Evergy Kansas Central, Inc.
818 S. Kansas Avenue
P.O. Box 889
Topeka, Kansas 66601

Re: Notice of Potential Violations/Opportunity to Confer
Tecumseh Energy Center, Tecumseh, Kansas

Dear Mr. Morrison:

Thank you for taking the time on January 25, 2021, and March 9, 2021, to discuss disposal of coal combustion residuals (CCR) at the Evergy Tecumseh Energy Center (TEC) located near Tecumseh, Kansas, and the requirements of 40 C.F.R. Part 257, Subpart D (the CCR Rule). After further review of the information posted on your publicly accessible CCR compliance web site (TEC CCR web site), the U.S. Environmental Protection Agency (the EPA or the Agency) continues to be concerned about compliance with the CCR Rule at TEC.

According to the TEC CCR web site, two units at the facility are subject to requirements in the CCR Rule: one surface impoundment (Bottom Ash Settling Area or BASA) and one landfill (322 Landfill). The Agency has reviewed the following documents posted for these units:

- Annual Groundwater Monitoring and Corrective Action (GWMCA) Reports (2017, 2018, 2019 and 2020, revised March 6, 2021)
- Groundwater Monitoring Systems Certification (2017, revised March 9, 2021)
- Statistical Method Certifications (2017, 2018, 2019)
- Closure Plan TEC Industrial Landfill 322 (2016, revised Mar 4, 2021)
- Post-Closure Plan TEC Industrial Landfill 322 (2016, revised March 4, 2021)

This review identified several missing, erroneous, or incomplete elements, which represent potential violations, described in Enclosure 1. The EPA's priority is to ensure Evergy is operating in compliance with the CCR Rule. While we appreciate Evergy's efforts to date to comply with the CCR Rule, and offers to perform additional work, the EPA has continuing concerns as to whether some requirements are being met. Based on the issues highlighted in the May 13, 2021, letter from Mr. Mark Anstoetter, and the results of the January and March meetings, we believe that further discussions are warranted. The EPA is interested in discussing the issues identified in Mr. Anstoetter's letter and developing an agreed-upon compliance schedule to address areas of noncompliance if possible. A proposed compliance schedule is set forth in Enclosure 2.

The EPA also believes that these potential violations are likely significant enough to warrant the assessment of a civil penalty. The terms of any agreed-upon resolution of areas of noncompliance, a compliance schedule and penalty would be incorporated into a Consent Agreement and Final Order issued pursuant to Section 3008(a) of RCRA, 42 U.S.C. § 6928(a).

Any submittal that TEC prepares to comply with the CCR Rule must be maintained, placed in the operating record, and posted by TEC in accordance with the recordkeeping, notification and publicly accessible CCR web site requirements, pursuant to 40 C.F.R. §§ 257.105, 257.106 and 257.107. Please note that original versions of documents must remain on the CCR web site for 5 years, in accordance with 40 C.F.R. § 257.107(c).

To schedule a call to discuss these issues, please contact Kelley Catlin in the Office of Regional Counsel within 10 calendar days of receipt of this letter at (913) 551-7110 or Bob Aston, at (913) 551-7392. Thank you for your prompt attention to this important matter.

Sincerely,

Wendy Lubbe
Acting Director
Enforcement and Compliance Assurance Division

cc: Mark Anstoetter, Esq.
Shook, Hardy and Bacon
manstoetter@shb.com

Julie Coleman, Director (e-copy)
Bureau of Waste Management
Kansas Department of Health and Environment

ENCLOSURE 1
Potential Violations
Tecumseh Energy Center

1) Reporting monitoring data

- 40 C.F.R. § 257.90(e)(3) – The Annual Groundwater Monitoring and Corrective Action (GWMCA) Reports must include all monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98. This includes results of laboratory analysis of groundwater or other environmental media samples for the presence of constituents in Appendices III and IV to 40 C.F.R. part 257 (or of other constituents, such as those supporting characterization of site conditions that may ultimately affect a remedy), any required statistical analyses performed on those results, measured groundwater elevations, and calculated groundwater flow rate and direction. The posted Annual GWMCA Reports do not include all the required information.

2) Groundwater monitoring system

- 40 C.F.R. § 257.91 – The performance standards require that a groundwater monitoring system consist of a sufficient number of wells, installed at appropriate locations and depths, to accurately characterize the quality of groundwater upgradient and passing the downgradient boundary of the unit. The following issues with the groundwater monitoring system have been identified:
    - 40 C.F.R. § 257.91(c) – Each groundwater monitoring system is required to have a sufficient number of wells to accurately characterize groundwater quality, including at least three downgradient wells[1]. In December 2019 at the BASA, MW-9 was not monitored due to lack of water in the well. This resulted in failure of the BASA groundwater monitoring system to meet the requirement to have a minimum of 3 downgradient wells in the BASA groundwater monitoring system during this semi-annual period.
    - 40 C.F.R. § 257.91(f) – The certification by a professional engineer (P.E.) that the groundwater monitoring systems have been designed and constructed to meet the requirements of 40 C.F.R. § 257.91 must document the basis supporting the determination for monitoring systems using only one upgradient and three downgradient wells. The groundwater monitoring systems for both the BASA and the 322 Landfill each consist of only one upgradient and three downgradient wells. The P.E. certification for the systems does not include the basis for the certification. This basis must include the criteria specified in 40 C.F.R. § 257.91(b), which is required to

[1] As the EPA explained in the preamble to the CCR Rule (see 80 FR 21400), "As a practical matter, the EPA expects that there will be few cases, if any, where four wells will be sufficient, given that this requirement was originally developed for hazardous waste management units that are typically much smaller than CCR units. As mentioned above, a small unit with simple geology, a flat and constant hydraulic gradient, uniform hydraulic conductivity, low seepage velocity, and high dispersivity potential would be the type of unit for which the minimum number of wells could be sufficient to meet the overall performance standard. Although the EPA is finalizing a requirement for one upgradient and three downgradient wells as a regulatory minimum, the Agency expects large CCR units to have many more wells because most CCR sites have hydrologic settings that are too complex for the regulatory minimum to be adequate."

be considered when determining the appropriate number, spacing and depths of groundwater monitoring wells.

TEC has not provided any of the information required to support the design of the groundwater monitoring systems in the system certifications, except potentiometric maps included in the Annual GWMCA Reports. Some of the potentiometric maps appear to be based on an insufficient number of groundwater elevation data points to support the contours drawn. Moreover, there is evidence that both the BASA and the 322 Landfill groundwater monitoring systems do not meet the performance standard in 40 C.F.R. § 257.91.

With regard to the BASA, the analysis and data included in the BASA Alternate Source Demonstrations (ASDs) indicate background groundwater quality may not be properly characterized. Potentiometric maps included in the revised 2018 Annual GWMCA Report indicate at least a 90-degree shift in groundwater flow direction. This shift in flow direction results in monitoring well MW-11, which is designated as a side gradient well, being downgradient during 2018. This shift in flow direction similarly affects upgradient well MW-7. During 2018, MW-7 is depicted as either side gradient and potentially downgradient of the BASA unit and may not represent true background conditions. This shift in groundwater flow direction is not noted in the revised 2018 GWMCA Report. Additionally, the BASA is located next to a water feature that appears to exert seasonal or temporal influence on groundwater flow direction.

With regard to the 322 Landfill, this unit is too large for one upgradient and three downgradient wells to be spatially adequate to represent groundwater quality. The unit is approximately 56 acres, and its western and eastern boundaries are each approximately 2500 feet long. However, there are no groundwater monitoring wells along the western boundary of the unit and only one downgradient well on the eastern boundary of the unit, approximately 300 feet south of the northeast corner of the unit (see Figure 1 in the 2020 Annual GWMCA Report). Potentiometric flow maps depict groundwater flow toward the north/northeast, and groundwater is depicted as migrating toward the unit in this direction along the entire length of the western boundary and away from it along the entire length of the eastern boundary. 40 C.F.R. § 257.91(a)(2) requires that the downgradient monitoring system be "installed at the waste boundary that ensures detection of groundwater contamination," such that "all potential contaminant pathways must be monitored." Thus, the existence of over 2,000 feet of unmonitored, downgradient waste boundary along the eastern side of the landfill does not ensure detection of groundwater contamination.

The number, spacing, and depths of groundwater monitoring wells needed to sufficiently monitor upgradient groundwater quality and at the downgradient boundary must be determined using site-specific information as required by 40 C.F.R. § 257.91(b), which is currently missing from the reports and certifications available for review. However, simply based on size and available information it appears that neither background groundwater quality nor groundwater quality at the downgradient unit boundary are accurately characterized at either the BASA or the 322 Landfill.

3) Groundwater sampling and analysis requirements

- 40 C.F.R. § 257.93(d) – Background groundwater quality must be established for each constituent in a hydraulically upgradient well, or a background well that meets the requirements of 40 C.F.R. § 257.91(a)(1). 40 C.F.R. § 257.91(a)(1) allows background groundwater quality to be established in a well that has not been affected by leakage from a CCR unit and is not hydraulically upgradient if either of two criteria is met:

  - inability to determine a groundwater flow gradient; or
  - samples from other wells are as representative or more representative of background groundwater quality than samples from a hydraulically upgradient well.

  Intrawell comparisons conducted at the BASA do not appear to meet these requirements, as discussed below.

- 40 C.F.R. § 257.93(c) – The rate and direction of groundwater flow must be determined each time groundwater is sampled. The determination of the rate of groundwater flow has not been included in the Annual GWMCA Reports.

When conducting "intrawell" data comparison, samples taken at different times from the same well are used to characterize both background groundwater quality and downgradient groundwater quality. When conducting "interwell" data comparison, samples from one or more upgradient or side-gradient wells characterize background groundwater quality and samples from one or more down-gradient wells characterize groundwater quality down-gradient from the unit.

TEC has utilized intrawell comparisons at certain wells for certain constituents in Appendix IV to 40 C.F.R. part 257, for which interwell comparisons would have yielded a statistically significant level (SSL) (e.g., see Table II in the 2019 Annual GWMCA Report for the BASA for MW-9 for arsenic and cobalt and MW-10 for arsenic). This approach was implemented for the October 2019 sampling event, after TEC prepared an ASD in which TEC claimed there was natural variation in groundwater quality occurring below the BASA, for particular Appendix IV constituents only.

TEC has not provided data that indicate a groundwater flow gradient is not present at the BASA. Accordingly, the first criterion set forth at 40 C.F.R. § 257.91(a)(1)(i), that would allow background to be established in a non-upgradient well, is not met. With respect to the second criterion set forth at 40 C.F.R. § 257.91(a)(1)(ii), TEC has provided no information that indicates that the samples taken from the downgradient wells at the BASA are as or more representative of background groundwater quality than could be obtained from an up-gradient well.

If background groundwater quality samples are obtained from either an upgradient or a side-gradient well, interwell data comparisons would necessarily be used to identify SSIs or SSLs, because samples to characterize groundwater quality at the downgradient unit boundary would necessarily come from different wells than background samples. Additionally, samples that characterize background groundwater quality must always be taken from a well unimpacted by releases from a CCR unit.

If it can be demonstrated that samples obtained from wells located at the downgradient boundary of the CCR unit characterize background groundwater quality as accurately or more accurately than samples from an upgradient well, then all data analyzed for SSIs or SSLs would come from the same wells, and intrawell data comparisons would be used. As noted above, samples that characterize background groundwater quality must always be taken from a well unimpacted by releases from the CCR unit. Like many other CCR units, the BASA operated for decades (since construction in 1968) prior to becoming regulated by the CCR Rule. The 2019 Annual GWMCA Report indicates in a footnote to Table II that data collected through June 2019 were used to characterize background in the intrawell statistical analysis of the October 2019 groundwater data. Samples would need to have been obtained from these wells long before that time in order for them to be known to be unimpacted by the CCR unit. Therefore,

intrawell data comparisons are inappropriate to demonstrate compliance with the requirements of the CCR Rule at the BASA.

4) Assessment Monitoring program

Whenever there is an SSI over background levels for one or more of the constituents in Appendix III to 40 C.F.R. part 257 at any monitoring well at the waste boundary, an assessment monitoring program must be established. The following issues with the assessment monitoring program at the BASA have been identified:

- 40 C.F.R. § 257.95(b) – The assessment monitoring program requires annual sampling for all constituents in Appendix IV to 40 C.F.R. part 257. This sampling was last conducted at the BASA on June 25, 2019. No sampling was conducted in 2020 to meet this requirement, as reported in Section 2.3.3 of the 2020 Annual GWMCA Report (amended March 6, 2021).

- 40 C.F.R. § 257.95(d)(1) – The assessment monitoring program requires semi-annual monitoring at all wells for all constituents in Appendix III to 40 C.F.R. part 257 and for those constituents in Appendix IV to 40 C.F.R. part 257 that were detected in the sampling event conducted in accordance with 40 C.F.R. § 257.93(b). This sampling was last conducted timely on March 20-21, 2019. The next sampling event occurred on October 10, 2019, beyond the semi-annual timeframe. No sampling was conducted in 2020 to meet this requirement, as reported in Section 2.3.3 of the 2020 Annual GWMCA Report (amended March 6, 2021).

5) The Alternate Source Demonstrations (ASD)

In order to rebut the site-specific monitoring data and analysis that resulted in an SSI or SSL, an ASD must be supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient. An ASD should be conclusive, rather than probable or possible.

At the BASA, constituents in Appendix IV to 40 C.F.R. part 257 were detected at SSLs in September 2018 and March 2019. The 2019 Annual GWMCA Report included ASDs for these sampling events. These ASDs do not support a determination that the SSLs detected (arsenic in MW-9 and MW-10 and cobalt in MW-9) in both September 2018 and March 2019 are due to an alternate source rather than the BASA, in accordance with requirements in 40 C.F.R. § 257.95(g)(3)(ii). Specific concerns regarding the validity of the ASDs include:

- No alternative source was credibly identified that would have contributed to the SSIs/SSLs detected. The EPA has previously outlined the expectations for a valid ASD in the Solid Waste Disposal Facility Criteria, Technical Manual[2] for the Municipal Solid Waste Landfill regulatory program at 40 C.F.R. part 258. In Chapter 5, beginning on page 286, and further explained on page 280, a facility seeking an ASD must document that "*an* alternative source exists" and that a hydraulic connection exists between *the* alternative source and the well with the significant increase. Furthermore, the facility must document that "constituents (or precursor constituents) are present at *the alternative source* or along the flow path *from the alternative source* prior to possible release from the regulated unit." The ASD regulatory

[2] Solid Waste Disposal Facility Criteria, Technical Manual (November 1993), EPA530-93-017 https://archive.epa.gov/epawaste/nonhaz/municipal/web/pdf/subparte.pdf

language at 40 C.F.R. part 258 tracks the ASD regulatory language at 40 C.F.R. part 257. Just as this approach makes sense and has been appropriate for ASDs under Part 258 for over 25 years, the Agency believes the same approach is appropriate for Part 257.

- Claims that variation in groundwater quality between upgradient and downgradient wells is occurring naturally are unsupported by data in the ASD. While the ASD highlights average decreasing concentrations of some constituents (e.g., boron, chloride and sulfate) from upgradient to downgradient wells as evidence of the BASA not impacting groundwater, the ASD neglects to address that higher calcium concentrations exist downgradient, and fluoride concentration patterns are mixed; the Appendix III sampling data are inconclusive in proving natural groundwater variation. Some Appendix IV sampling data show similar uneven concentration patterns, but some are more clearly at elevated levels downgradient for key constituents like arsenic. Sampling results do not indicate the presence of Appendix IV constituents at unexpected high concentrations in the aquifer matrix downgradient of the background wells. Other possible reasons for such variations include improper characterization of background groundwater quality (see prior discussion on the 2018 groundwater potentiometric maps), or changes in groundwater chemistry below the unit caused by releases from the BASA to the aquifer. Sampling from additional wells or other environmental media could better substantiate a claim of groundwater natural variability as the cause of constituent concentration patterns.

- The leachate tests are of limited value for the following reasons:

    - Not enough information is provided about the sampling collection protocols (e.g., depth, volume, location of samples), the typical residence time of ash in the unit, or how the composition of ash being disposed may have changed over time.

    - Ash collected from the impoundment may have already leached a substantial fraction of the contaminant mass and provide an incomplete estimate of total release potential.

    - Not enough information is provided to determine whether the selected leachate test accurately reflects field conditions. This is in part due to the lack of field parameter results in Annual GWMCA Reports. These tests are not useful in an ASD if they are not similar to conditions in the unit (e.g., pH of liquid or the liquid to solid ratio).

    - The leaching test results do not provide evidence to refute that elevated arsenic and cobalt at MW-9 and MW-10 are being at least partially caused by the unit.

- The evidence presented, primarily leachability testing, does not outweigh the significant amount of field data indicating the detections are the result of a leak in the BASA. This evidence includes the following:

    - The BASA does not have a liner to inhibit infiltration of releases into the underlying, uppermost aquifer.

    - Approximately 20 feet of hydraulic head was present within the BASA during operation to drive the sluiced ash water into the underlying, uppermost aquifer throughout the 35 years of operational history.

- Following dewatering of the BASA in September 2019, the groundwater elevations dropped approximately nine feet in MW-8, MW-9 and MW-10, confirming a direct hydraulic connection between sluiced ash in BASA and groundwater at these downgradient wells.

- Multiple SSIs above background occurred at all three downgradient wells (MW-8, MW-9, MW-10) in each of the four monitoring events in 2018 and 2019.

Because an ASD meeting the requirements of 40 C.F.R. § 257.95(g)(3)(ii) was not completed within 90 days of finding that an SSL was detected, TEC became subject to the requirements of 40 C.F.R. § 257.95(g) and was also required to initiate an Assessment of Corrective Measures within 90 days after detecting the SSL in accordance with 40 C.F.R. § 257.96.

While the EPA is not foreclosing TEC from continuing its efforts to identify an alternative source, TEC must, in parallel, work through the assessment monitoring and corrective action program.

6) Closure and post-closure requirements

For the reasons stated above, the EPA believes the BASA is subject to corrective action requirements. Accordingly, the Closure Plan must be amended, and a Post-closure Care Plan must be developed to reflect that the unit has triggered corrective action requirements. The Post-closure Care Plan must incorporate changes necessary to reflect that closure will be complete when constituent concentrations throughout the unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standards, in accordance with 40 C.F.R. § 257.102(c).

Regarding the 322 Landfill, the EPA identified issues associated with the Post-closure Care Plan. In general, the plan should document actions to be taken to comply with the performance standards for post-closure care in 40 C.F.R. § 257.104. The Post-closure Care Plan lacked specificity regarding actions to be taken, frequency or timing of activities discussed, and criteria for implementing described contingencies. By failing to provide specific measures or any guiding procedures or principles, it fails to serve as a plan. As such, the Landfill Post-closure Care Plan does not meet the requirements at 40 C.F.R. § 257.104(d):

- 40 C.F.R. § 257.104(d)(1)(i) requires that the plan contain a description of monitoring and maintenance activities required in 40 C.F.R. § 257.104(b)(1), to maintain the integrity and effectiveness of the final cover system. Section 5.1 of the Landfill Post-closure Plan states that inspections will initially occur weekly, then quarterly or semi-annually, and that "Inspection frequency will be reduced as final cover conditions are found to be stable and depending on the need for periodic maintenance." The Plan does not provide any criteria for evaluating stability or any method for conducting inspections. It does not specify what level of periodic maintenance might warrant more or less frequent inspections.

- Additionally, potential damage to the final cover, due to the lack of planned actions to restrict public access to the cover, necessitates the need for more frequent inspections than semi-annual.

- Section 5.2 of the Landfill Post-closure Plan provides a list of possible measures that could be used to control public access to the landfill (e.g., site security, fencing, lockable gates, and/or site surface water features) to prevent cover damage. This list simply represents a broad range of options, all or none of which may be implemented. If any of these measures were to be implemented, there is no information about their design (e.g., fence height) or requirements for maintenance or inspection.

ENCLOSURE 2
Proposed Compliance Schedule
Tecumseh Energy Center

#	CCR Rule	Summary of Issues Discussed	Projected Time Frame for Correction
1	40 C.F.R. § 257.90(e)	Incomplete Reports	30 days
2	40 C.F.R. § 257.91(c)	BASA groundwater monitoring system lacked sufficient number of wells	30 days
3	40 C.F.R. § 257.91(f)	Incomplete groundwater monitoring system certification	30 days
4	40 C.F.R. § 257.93(c)	Failure to report groundwater flow rate	30 days
5	40 C.F.R. § 257.95(b)	Conduct annual assessment monitoring for all constituents in Appendix III and IV	30 days
6	40 C.F.R. § 257.95(d)	Conduct semi-annual assessment monitoring for all constituents in Appendix III and for Appendix IV identified in sampling required by item 5	90 days
7	40 C.F.R. § 257.91	Submit a plan to install additional wells at 322 Landfill	45 days
8	40 C.F.R. § 257.95(g) and 40 C.F.R. § 257.96	Submit a plan to conduct initial fieldwork to characterize nature and extent of release from BASA and initiate an assessment of corrective measures (ACM)	45 days
9	40 C.F.R. § 257.93(d) and § 257.91(a)(1)	Establish background levels in wells as required and re-analyze groundwater monitoring data to identify SSLs for inclusion in ACM	45 days
10	40 C.F.R. § 257.104 and §§ 257.102(b), (c)	Develop a BASA Post-closure Care Plan and amend the Closure Plan to reflect the fact that corrective actions requirements apply	45 days
11	40 C.F.R. §257.104	Amend 322 Landfill Post-closure Plan to identify planned land use and to include a plan for actions in accordance with requirements to prevent damage to cap.	45 days
12	40 C.F.R. § 257.105-257.107	Notification and reporting requirements	Ongoing

Attachment F

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
L-17J

Ronald Froh, CEO & President
Commercial Liability Partners, LLC
2275 Cassens Drive, Suite 118
Fenton, MO 63026

Ronald Froh, CEO & President
New Richmond Development Corp., LLC
2275 Cassens Drive, Suite 118
Fenton, MO 63026

Jon Godlewski, Site Manager
New Richmond Development Corp., LLC
757 U.S. Highway 52
New Richmond, OH 45157

Dear Mr. Froh and Mr. Godlewski:

This letter provides written confirmation of the discussion between the U. S. Environmental Protection Agency (EPA), Commercial Liability Partners (CLP) and New Richmond Development (NRD) Corporation staff during our conference call of August 12, 2021, regarding the history of the site and the closure of Coal Combustion Residuals (CCR) surface impoundments at the former Beckjord facility in New Richmond, Ohio. This letter also serves to notify you that Ponds C and Cx are regulated under 40 CFR Part 257 Subpart D, and therefore CLP and NRD will need to take action to bring these ponds into compliance with all applicable requirements.

On the August 12th conference call, facility representatives confirmed that Ponds C and Cx received CCR from Pond A as part of the Pond A closure process. Prior to the placement of CCR in Ponds C and Cx, those ponds were considered inactive impoundments at an inactive facility and were therefore not regulated under 40 CFR part 257 subpart D.

However, by disposing of CCR in Ponds C and Cx after October 19, 2015, Ponds C and Cx fall within the definition of an "existing CCR surface impoundment." An existing CCR surface impoundment is a CCR surface impoundment "that receives CCR both before and after October 19, 2015." 40 C.F.R. § 257.53. As a consequence, Ponds C and Cx are regulated under Part 257, in accordance with 40 C.F.R. § 257.50(b), which specifies that "[t]his subpart applies to owners and operators of…existing CCR surface impoundments…that dispose or otherwise engage in solid waste management of CCR." The fact that the utility is no longer generating power is irrelevant; there is no exclusion in 40 C.F.R. § 257.50(b) for existing CCR surface impoundments located at inactive utilities.

As existing unlined CCR surface impoundments, Ponds C and Cx are required to close pursuant to 40 C.F.R. 257.101(a). That same provision expressly prohibits "placing CCR" in any units required to close for cause.

You may contact Jessica Schumacher at schumacher.jessica@epa.gov if you have further questions or if you have further information you wish EPA to consider. If either CLP or NRD's attorneys wish to discuss this matter, they should contact Laurel Celeste at celeste.laurel@epa.gov.

Sincerely,

Edward Nam
Director
Land, Chemicals and Redevelopment Division

cc: Tiffani Kavalec, Chief, Division of Surface Water
Ohio Environmental Protection Agency
Vladimir Cica, Chief, Division of Materials and Waste Management
Ohio Environmental Protection Agency
(All via email)

Attachment G

PROPOSED DECISION

Proposed Denial of Alternative Closure Deadline for General James M. Gavin Plant

SUMMARY:

Gavin Power, LLC (Gavin) submitted a demonstration (the "Demonstration") to the Environmental Protection Agency (EPA) seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow a coal combustion residuals (CCR) surface impoundment, the Bottom Ash Pond (BAP), to continue to receive CCR and non-CCR wastestreams after April 11, 2021, at the General James M. Gavin Plant located in Cheshire, Ohio. EPA is proposing to deny this extension request. In the Demonstration, Gavin requested an alternative closure deadline of May 4, 2023, for the BAP. EPA is proposing to deny the request for an extension based on a proposed determination that the Demonstration does not meet the requirements of § 257.103(f)(1) and a proposed determination that Gavin has failed to demonstrate that the facility is in compliance with the requirements of 40 C.F.R. 257 subpart D, as required in § 257.103(f)(1)(iii).

DATES: *Comments.* Comments must be received on or before February 23, 2022.

ADDRESSES AND PUBLIC PARTICIPATION: The EPA has established a docket for this notice under Docket ID No. EPA-HQ-OLEM-2021-0590. EPA established a docket for the August 28, 2020, CCR Part A final rule under Docket ID No. EPA-HQ-OLEM-2019-0172. All documents in the docket are listed in the https://www.regulations.gov index. Publicly available docket materials are available either electronically at https://www.regulations.gov or in hard copy at the EPA Docket Center. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-

1742. You may send comments, identified by Docket ID. No. EPA-HQ-OLEM-2021-0590, by any of the following methods:

- Federal e-Rulemaking Portal: https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management, Docket ID No. EPA-HQ-OLEM-2021-0590, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier (by scheduled appointment only): EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. – 4:30 p.m., Monday – Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this action. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia

submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

Due to public health concerns related to COVID-19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at https://www.epa.gov/dockets.

The EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

FOR FURTHER INFORMATION CONTACT:

- Lydia Anderson, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0523; email address: Anderson.Lydia@epa.gov, and/or
- Kirsten Hillyer, Office of Resource Conservation and Recovery (ORCR), Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0542; email address: Hillyer.Kirsten@epa.gov.
- For more information on EPA's coal ash regulations, please visit h*ttps://www.epa.gov/coalash*.

SUPPLEMENTARY INFORMATION:

Table of Contents

List of Acronyms

AHE – Ash Handling Equipment

ASD – Alternate Source Demonstration

BAP – Bottom Ash Pond

CBI – Confidential Business Information

CCR – Coal Combustion Residuals

C.F.R. – Code of Federal Regulations

DCC – Drag chain conveyor

ELG – Effluent Limit Guidelines

EPA – Environmental Protection Agency

FAR – Fly Ash Reservoir

FGD – Flue gas desulfurization

Gavin – Gavin Power LLC

GWMCA – Groundwater Monitoring Corrective Action

LPL – Lower prediction limit

MGD – Million gallons per day

NFAP – Kyger Creek North Fly Ash Pond

NPDES – National pollutant discharge elimination system

ODNR – Ohio Department of Natural Resources

OEPA – Ohio Environmental Protection Agency

ORP – Oxidation-reduction potential

PJM – PJM Interconnection LLC

PWP – Process Water Pond

RTO – Regional Transmission Organization

RWL – Residual Waste Landfill

SSI – Statistically significant increase

TDS – Total dissolved solids

UPL – Upper prediction limit

USGS – United States Geological Survey

WWTP – Wastewater Treatment Plant

I. General Information

A. What decision is the Agency making?

EPA is proposing to deny an extension request submitted by Gavin for a CCR surface impoundment, the BAP, located at the General James M. Gavin Plant located in Cheshire, Ohio. Gavin submitted a Demonstration to EPA for approval seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the impoundment to continue to receive CCR and non-CCR

wastestreams after April 11, 2021. EPA is proposing that Gavin cease receipt of waste into the CCR surface impoundment no later than 135 days from the date of EPA's final decision.

B. What is the Agency's authority for taking this decision?

This proposal is being issued pursuant to the authority in 40 C.F.R. § 257.103(f).

II. Background

A. Part A Final Rule

In April 2015, EPA issued its first set of regulations establishing requirements for CCR surface impoundments and landfills. (Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities,80 FR 21301) (the "CCR Rule"). In 2020, EPA issued the CCR A Holistic Approach to Closure Part A: Deadline to Initiate Closure rule (85 FR 53516 (Aug. 28, 2020)) (the "Part A Rule"). The Part A Rule established April 11, 2021, as the date that electric utilities must cease placing waste into all unlined CCR surface impoundments. The Part A Rule also revised the alternative closure provisions of the CCR Rule (40 C.F.R. § 257.103) by allowing owners or operators to request an extension to continue to receive both CCR and non-CCR wastestreams in an unlined CCR surface impoundment after April 11, 2021, provided that certain criteria are met. EPA established two site-specific alternatives to initiate closure of CCR surface impoundments (40 C.F.R. § 257.103(f)), commonly known as extensions to the date to cease receipt of waste: 1) development of alternative capacity by the April 11, 2021, deadline is technically infeasible (40 C.F.R. § 257.103(f)(1)), and 2) permanent cessation of a coal-fired boiler(s) by a date certain (40 C.F.R. § 257.103(f)(2)).

The first site-specific alternative to initiate closure of CCR surface impoundments is *Development of Alternative Capacity is Technically Infeasible* (40 C.F.R. § 257.103(f)(1)).

Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using its unlined surface impoundment for the specific amount of time needed to develop alternative disposal capacity for its CCR and non-CCR wastestreams. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(1). To have an alternative deadline approved, the regulation requires the facility to demonstrate that 1) no alternative disposal capacity is currently available on- or off-site of the facility; 2) the CCR and/or non-CCR waste stream must continue to be managed in that CCR surface impoundment because it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity either on- or off-site at the facility by April 11, 2021; and 3) the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. § 257.103(f)(1)(i)-(iii). To support the requested alternative deadline, the facility must submit detailed information demonstrating that the amount of time requested is the fastest technically feasible time to complete development of alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A).

The second site-specific alternative to initiate closure of CCR surface impoundments is for the owner or operator to demonstrate that it will permanently cease operation of coal-fired boilers at the facility. *Permanent Cessation of Coal-Fired Boiler(s) by a Date Certain* (40 C.F.R. § 257.103(f)(2)). Under this alternative an owner or operator may submit a demonstration seeking EPA approval to continue using an unlined CCR surface impoundment in the interim period prior to permanently stopping operation of coal-fired boiler(s) at the facility. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(2). The owner or operator must show that 1) the facility will cease operation of coal-fired boiler(s) and complete closure of the CCR surface impoundment(s) by the specified deadlines (no later than October 17, 2023, for impoundments 40 acres or smaller and no later than October 17, 2028, for impoundments larger

than 40 acres); and 2) in the interim period prior to the closure of the coal-fired boiler, the facility must continue to use the CCR surface impoundment due to the absence of alternative disposal capacity both on-site or off-site. *Id*. Unlike the requirements for the first alternative, the owner or operator does not need to develop alternative disposal capacity. The regulations require a demonstration that 1) no alternative disposal capacity is available on or off-site of the facility; 2) the risks from continued use of the impoundment have been adequately mitigated; 3) the facility is in compliance with all other requirements of 40 C.F.R. part 257 subpart D; and 4) closure of both the impoundment and the coal-fired boiler(s) will be completed in the allowed time. 40 C.F.R. § 257.103(f)(2)(i)-(iv).

B. General James M. Gavin Plant

On November 30, 2020, Gavin submitted a Demonstration pursuant to § 257.103(f)(1) requesting additional time to develop alternative capacity to manage CCR and non-CCR wastestreams at the Gavin Power Plant in Cheshire, Ohio. Gavin Power, LLC is the owner and operator of the Gavin Power Plant.

The Demonstration submitted by Gavin seeks approval of an alternative site-specific deadline to initiate closure of its BAP. Specifically, Gavin requests an alternative deadline of May 4, 2023, by which date Gavin would cease routing all non-CCR wastestreams to the BAP and initiate closure of the impoundment. Gavin has projected that it will cease managing CCR in the BAP by March 2023 when the facility will enter an outage to convert Unit 2 from wet to dry ash handling.

As described in the Demonstration, Gavin will obtain alternative capacity for the wastestreams currently managed in the BAP by implementing the following efforts: 1) converting wet handling systems to dry handling systems for certain boiler ash; and 2)

constructing a new non-CCR wastestream basin for non-CCR flows. Gavin will also temporarily reroute its non-CCR flows while the BAP undergoes closure and the new Process Water Pond (PWP) is being constructed.

EPA is providing additional details on the Gavin Plant below, including information on the generation capacity of the plant, information on its CCR surface impoundments and landfills, and information on other non-CCR impoundments. This summary is based on information provided in the Demonstration.

1. *Coal-fired boilers and generation capacity*

The Demonstration states that Gavin operates two coal-fired units. The total generation capacity of the two units is 1,300 megawatts each, for a total of 2,600 megawatts (net).

2. *CCR units and CCR wastestreams*

The Gavin Plant has three CCR units on-site that are subject to the federal CCR regulations; two of these are actively receiving waste, the other is inactive and in the process of closing. The two active units are the BAP and the Residual Waste Landfill (RWL). The BAP CCR surface impoundment is the unit for which an alternative deadline is sought. The Demonstration states that the approximate surface area of the Gavin Plant's BAP is 57.8 acres, as shown by various aerial maps submitted with the Demonstration.

The BAP is an unlined CCR surface impoundment and subject to closure pursuant to § 257.101(a)(1). This provision provides that Gavin must cease placing CCR and non-CCR wastestreams into the unit and either retrofit or close it as soon as technically feasible, but not later than April 11, 2021. According to the Demonstration, the BAP is in compliance with all location restrictions specified in § 257.60-257.64.

Gavin is requesting to continue to use the BAP to manage its CCR wastestreams until March 2023, and until May 4, 2023, to cease receipt of non-CCR wastestreams. According to the Demonstration, the basis for this request is the infeasibility of developing alternative capacity by April 11, 2021. Gavin's approach to developing alternative capacity must facilitate the management of the plant's CCR and non-CCR wastestreams throughout construction in a way that allows the plant to meet the National Pollutant Discharge Elimination System (NPDES) discharge limits.

According to the visual timeline included in the Demonstration, March of 2023 is when the final installation of the Ash Handling Equipment (AHE) dry handling system can be completed, as coordinated with the pre-arranged major outage schedule. Thus, Gavin projects that by March 2023 the BAP will cease receipt of all CCR flows. Gavin has projected that it can complete the direct rerouting of its largest wastestream, the cooling tower blowdown, to its permitted Outfall 006 by May 4, 2023. This activity is Gavin's justification for requesting a date of May 4, 2023, to cease receipt of all wastes to the BAP. Construction activities are scheduled to be completed such that the new non-CCR wastewater basin, the PWP, is expected to be ready to receive waste by November 2024. Gavin has stated that it plans to temporarily reroute its remaining non-CCR flows after the BAP can no longer receive waste until the PWP is ready to manage the flows.

As part of its regular operation, the Gavin Plant generates two wet-handled CCR wastestreams. Combined, these wastestreams have an average flow rate of 4.9 million gallons per day (MGD). Bottom ash is sluiced from below both coal-fired generating units, and this transport water is sent to the BAP, where CCR solids are separated from the liquid waste through gravitational settling. These CCR materials are regularly excavated and sent to the RWL. The

outflow from the BAP passes to the Reclaim Pond. Gavin explained that as part of the Reclaim Pond's regular operation, the effluent from the BAP undergoes further solids settling as it is decanted through a reinforced concrete drop inlet structure before flowing into the Reclaim Pond. From the Reclaim Pond, it is discharged through Outfall 006 to the Ohio River (in accordance with the Gavin Plant's NPDES permit) or it is recirculated for Plant use. Gavin included a process flow diagram in Appendix A of the Demonstration.

The Demonstration identifies one active CCR landfill, the RWL. It has a capacity of 94.5 million cubic yards, and it receives CCR materials excavated from the BAP. The RWL will receive the generated bottom ash once the dry handling system is in operation. Gavin is currently expanding the RWL. The Demonstration identifies an inactive CCR unit, the 300-acre unlined[1] Fly Ash Reservoir (FAR).[2] According to the unit's closure plan,[3] the FAR received fly ash slurry discharges during past operation. In 1994, the plant installed scrubbers and ceased discharging fly ash slurry to the reservoir. Since then, the unit's only inflows have been direct precipitation, stormwater runoff, and acid mine drainage from mined areas.[4] The Demonstration explains that the FAR is currently in the final stages of closure by capping with CCR in place and should be closed completely by the end of 2021. The FAR and RWL units are adjacent to one another but do not share groundwater monitoring networks.

The Demonstration explains that the BAP will be closed by a combination of removal of CCR and closure with capping CCR in place. The portion of the BAP that is closed by removal of CCR will be repurposed as a process-water-only settling pond (PWP). The rest of the CCR materials in the existing BAP will be consolidated and capped in place with a final cover system

[1] Liner Design Certification (Fly Ash Pond), October 2016
[2] Also often called the "Stingy Run Fly Ash Dam," particularly in older compliance documents
[3] Closure Plan, Stingy Run Flyash Pond, October 2016, section 2.0
[4] Id.

in the remaining footprint of the BAP. The Demonstration explains that the BAP will no longer be used to manage CCR wastestreams after conversion to a dry handling system is complete.

Gavin stated that it requires the use of the BAP after April 11, 2021, due to the wastestreams currently managed in the unit. Gavin stated in the Demonstration that completing conversion from wet to dry ash handling systems (from technology evaluation to construction) would require 51 months. Gavin explained that it began this process in March 2019 and that because it was unable to complete this process before April 11, 2021, it was unable to cease CCR flows to the BAP before April 11, 2021.

3. Non-CCR impoundments and non-CCR wastestreams.

The Demonstration identifies one non-CCR impoundment on the Gavin Plant site, that is, the Reclaim Pond, which is 6.7-acres. It is adjacent to the BAP and Gavin refers to the two units collectively as the "Bottom Ash Complex." According to the Demonstration, because the Reclaim Pond was not designed to receive CCR and does not receive CCR, it is not a regulated surface impoundment under the CCR Rule. Gavin did not specify in the Demonstration whether the Reclaim Pond is lined.

Google Earth satellite images suggest that there are several impoundments located around the RWL, which is located approximately 2 miles from the plant. The written narrative provided in the Demonstration does not mention these impoundments nor provide details such as their capacity or possible liner system. However, Appendix Q (which was submitted with the Demonstration) identifies these ponds as landfill leachate ponds. Google Earth images suggest that some or all these impoundments might be lined; however, EPA did not find further information in the Demonstration about a possible liner system. Figure 3-3 of Appendix A shows the Gavin Plant's water balance diagram. It indicates that flue gas desulfurization (FGD) Landfill

Leachate Pond #1, #2, and #3 discharge via permitted NPDES Outfalls 007, 008, and 009, respectively.

As part of its regular operation, the Gavin Plant generates on average 23–28 MGD of non-CCR wastestreams. Gavin identified about ten distinct non-CCR flows. One of these is the facility's largest wastestream, the cooling tower blowdown, which constitutes over one-third of the total average daily flow. The facility's non-CCR flows are all currently routed to the BAP. **Table 1** summarizes the Gavin Plant's CCR and non-CCR units and generated wastestreams.

Table 1. Key Site Attributes

CCR Units	**Unit**	**Type**	**Area (acres)**	**Capacity (million gallons)**	**Affected Unit?**
	Bottom Ash Pond (BAP)	Impoundment	57.8	Unspecified[1]	Yes
	Fly Ash Reservoir (FAR)	Impoundment	300	Unspecified[1]	No (currently being closed)
	Residual Waste Landfill (RWL)	Landfill	Unspecified[1]	94.5 million cubic yards	No
Non-CCR Impoundments	Reclaim Pond: 6.7 acres; several ponds near the RWL				
Affected Waste streams	**Type**	**Description**			**Generation Rate**
	CCR	**BAP** – Bottom Ash Transport Water (4.9 MGD)			**BAP:** 4.9 MGD
	Non-CCR	**BAP** – Cooling tower blowdown (11.52 MGD), pyrite sluice (2.34 MGD), turbine room sump (0.86 MGD), overflow sump (5.96 MGD), pretreatment sump (1.15 MGD), fly ash transfer sump (0.86 MGD), coal pile runoff (0.2 MGD), urea mixing skid sump (0.23 MGD), dust collection sump (0.002 MGD), stormwater (GP report Figure 3-3)			**BAP:** 23–28 MGD

1- Information not provided in the Demonstration

To continue to manage the facility's non-CCR flows when the BAP undergoes closure, a portion of the BAP will be closed by removal of CCR and repurposed as the PWP. When the PWP is scheduled to be operational, in November of 2024, it will receive the facility's non-CCR wastestreams. During construction of the PWP, Gavin plans to temporarily reroute its non-CCR flows. Gavin has projected that it can complete the direct reroute of its largest wastestream, the cooling tower blowdown, to its permitted Outfall 006 by May 4, 2023.

4. Gavin Plant Site

In the Demonstration, Gavin presented an overview of the Gavin Plant and its surrounding on-site property. *See section 5 of the Demonstration and Figures 5-1 and 5-2 of Appendix A.* Gavin explained that its footprint of available land on-site is constrained by existing infrastructure, the Ohio River, streams, past mining operations, and surrounding hills and slopes. Gavin explained that it does not have land that is readily available for new development because, according to the Demonstration, the flat areas within the property boundary are occupied by existing units and other infrastructure or are located within stream floodplains. Figure 5-1 indicates that outside the existing plant infrastructure but within the property are historical surface mines, abandoned underground mines, streams, freshwater ponds, and wetlands. Figure 5-2 indicates that much of the land not occupied by infrastructure within the property boundary is defined by slopes. These figures support Gavin's claim that it does not have readily available land within its property boundary on which to develop new infrastructure.

Gavin stated that because of the above site-constraining factors, "development of the balance of the property would be less technically feasible than the other options evaluated in this Demonstration." It further stated that, due to the below challenges, development of the balance

of the property would present challenges that would add, at a minimum, one to two years to the compliance schedule:

- "Geotechnical exploration required to determine the extent and impact of historical mining areas (e.g., subsurface geological evaluations, hydrological continuity and integrity, etc.) and structural stability;
- Environmental studies that would be required to evaluate potential impacts to stream and wetlands and compliance with location restrictions (e.g., aquifer separation); and
- Significant subsurface disturbances from blasting and other earth moving operations that would be required in these locations."

Table 1 above summarizes the facility's generated wastestreams and existing CCR and non-CCR units.

III. EPA Analysis of Demonstration

Gavin submitted the Demonstration electronically to the EPA Administrator on November 30, 2020. EPA has determined that the Demonstration Gavin submitted pursuant to 40 C.F.R § 257.103(f)(1) for the CCR surface impoundment at the General James M. Gavin Plant was complete. As a consequence of this determination, the deadline to cease receipt of waste and initiate closure is tolled until a final decision is issued by EPA. While EPA did determine the Demonstration to be complete and that it does contain all the required documentation, EPA is proposing to deny Gavin's request for an alternative compliance deadline for the BAP because Gavin failed to demonstrate that: 1) there is no alternative capacity for its non-CCR wastestreams and 2) that the requested time frame is the fastest technically feasible amount of time in which to complete the measures necessary to obtain alternative capacity. EPA is also proposing to deny the extension request because Gavin has not demonstrated that the facility is in compliance with all the requirements of 257 subpart D, based on concerns with the groundwater monitoring at the facility and with the closure plans. EPA is proposing that the deadline for Gavin to cease

placement of all CCR and non-CCR wastestreams into the BAP be no later 135 days from the date of EPA's final decision.

A. Evaluation of Gavin's Claim of No Alternative Disposal Capacity On- or Off-Site

To obtain an extension of the cease receipt of waste deadline, the owner or operator must demonstrate that there is no alternative disposal capacity available on or off-site. 40 C.F.R. § 257.103(f)(1)(iv)(A). As part of this, facilities must evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). The owner or operator must also evaluate the site-specific conditions that affected the options considered. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*). Additionally, the regulations prohibit the owner or operator from relying on an increase of cost or inconvenience of existing capacity as a basis for meeting this criterion. 40 C.F.R. § 257.103(f)(1)(i).

The Demonstration must substantiate the absence of alternative capacity for each wastestream that the facility is requesting to continue placing in the CCR surface impoundment beyond April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). As soon as alternative capacity is available for any wastestream, the owner or operator must use that capacity instead of the unlined CCR surface impoundment. 40 C.F.R. § 257.103(f)(1)(v). This means that, if there is a technically feasible option to reroute any of the wastestreams away from the surface impoundment, the owner or operator must do so. 40 C.F.R. § 257.103(f)(1)(ii), (v). In the CCR Part A Rule preamble, EPA acknowledged that some of these wastestreams are very large and will be challenging to relocate, especially for those that are sluiced. However, the smaller volume wastestreams have the potential to be rerouted to temporary storage tanks. In such cases, the owner or operator must evaluate this option, and, if it is determined to be technically feasible, must implement it. 85 Fed. Reg. 53,541.

1. Lack of Alternative On-site Capacity: CCR Wastestreams

Gavin concluded that there was no additional capacity available on-site for the CCR wastestreams currently managed in the BAP. EPA is proposing to find that Gavin's Demonstration does not adequately support this conclusion.

Gavin presented its evaluation of the existing on-site options that could provide alternative disposal capacity for the Gavin Plant's bottom ash transport water. Beyond the BAP, Gavin has two existing CCR units on-site: the RWL and FAR. Gavin determined that both are unable to receive the facility's CCR wastestream. Gavin's RWL receives only dry CCR and cannot receive wet wastestreams. Gavin's FAR is an unlined CCR surface impoundment which is in the final stages of closure and is therefore unable to receive further waste.

According to the Demonstration, because the Reclaim Pond was not designed to receive CCR and does not receive CCR, it is not a regulated surface impoundment under the CCR Rule. Gavin did not provide technical details, such as lack of a compliant liner, justifying this assertion. According to Figure 3-3 of Appendix A (the plant's water balance diagram), the Reclaim Pond receives on average 9.1 MGD, so it appears to have the required capacity for the 4.9 MGD of bottom ash transport water. Additionally, Gavin did not include discussion of the several landfill leachate ponds, which surround the RWL, in the Demonstration narrative. The Demonstration does not provide information about whether these ponds are lined or what their capacities are. Gavin did not provide enough information for EPA to determine whether either the Reclaim Pond or the landfill leachate ponds could receive the facility's CCR wastestreams. To obtain an extension Gavin was required to evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). Based on the

absence of any discussion of the landfill leachate ponds or technical supporting information for the Reclaim Pond, EPA is proposing to determine that Gavin failed to meet this criterion.

2. Lack of Alternative Off-site Capacity: CCR Wastestreams

Gavin concluded that there was no additional capacity available off-site for the CCR wastestreams currently managed in the BAP. *See sections 5.5.3 and 5.6.1 of the Demonstration.* Gavin also concluded that transporting the bottom ash transport water off-site is not technically feasible. EPA is proposing to conclude that there are no nearby off-site facilities which could receive the Gavin Plant's CCR wastestreams.

Gavin evaluated existing landfills and surface impoundments located within a 50-mile radius of the Gavin Plant as potential alternative disposal capacity options for its bottom ash slurry. The analysis provided in the Demonstration considered eight off-site surface impoundments or dams. Gavin determined that none of the identified surface impoundments would be able to receive the Gavin Plant's bottom ash slurry. According to Gavin, six of the impoundments are closed or closing and one does not have a compliant liner (both criteria apply to the American Electric Power Project 1301 Ash Pond). Based on information in the Demonstration, the remaining two evaluated units are inactive or considered a high risk for flooding and are unlikely to have a compliant liner due to their age. The analysis provided in the Demonstration considered nine off-site landfills. None of the landfills identified by Gavin can accept a wet-handled bottom ash wastestream.

Gavin used the Ohio Environmental Protection Agency's (OEPA) database of NPDES permits to search for industrial and municipal wastewater treatment plants (WWTPs) in Ohio which could receive the combined approximately 33 MGD of CCR and non-CCR flows generated at the Gavin Plant. Gavin determined that there are no off-site WWTP facilities in

Ohio within 50 miles that could receive their combined wastewaters. Gavin did not consider facilities across state lines in West Virginia due to the time required to permit a wastewater pipeline across state lines. Gavin stated that this option is expected to take longer than other alternative capacity options considered. Gavin evaluated using tanker trucks to transport its 4.9 MGD bottom ash transport water off-site and concluded that this option is technically infeasible. Gavin calculated that a minimum of 800 trucks per day would be required to transport its CCR wastestreams off-site, assuming that a typical tanker truck storage volume is 6,000 gallons. Gavin stated that therefore a pipeline would be required to transport its wastestreams off-site.

EPA also used OEPA's database to search for existing off-site facilities within a 50-mile radius that might be able to receive Gavin's CCR wastestreams. Based on EPA's review of each facility's NPDES permit, with the exception of Kyger Creek Station, none of the plants identified appear to combust coal. These facilities therefore would most likely not be permitted or designed to accept the CCR wastestreams from the Gavin Plant. Kyger Creek Station is unlikely to have the capacity to accept additional CCR wastestreams because the Ohio Valley Electric Corporation, the owner and operator, submitted a § 257.103(f)(1) Demonstration to EPA.

3. Lack of Alternative On-site Capacity: Non-CCR Wastestreams

Gavin evaluated several existing on-site options and concluded that there was no additional capacity available on-site for the non-CCR wastestreams currently managed in the BAP.

According to Figure 3-3 of Appendix A of the Demonstration, the non-CCR wastestreams managed in the BAP are cooling tower blowdown, pyrite sluice, turbine room sump, overflow sump, pretreatment sump, fly ash transfer sump, coal pile runoff, urea mixing skid sump, dust collection sump, and rainfall. In total, the BAP receives 23.1–28 MGD of non-

CCR flows. EPA assessed the information provided in the Demonstration and used publicly available data systems to gather further information. EPA identified three potential on-site alternative capacity options that Gavin did not evaluate, but which, based on the information contained in the Demonstration, might be able to manage some of the non-CCR wastestreams that are currently handled in the BAP. Consequently, EPA is proposing to conclude that Gavin has failed to demonstrate that there is no existing alternative capacity on-site for the non-CCR wastestreams.

i) Rerouting some or all non-CCR wastestreams to the Reclaim Pond or directly to Outfall 006

Gavin states in the Demonstration that the "plan to temporarily reroute the existing flows during construction in the BAP is pending detailed engineering. Gavin will evaluate each process flow and the potential to temporarily route process water through treatment, directly to the Reclaim Pond, or to Outfall 006." Gavin was required to have completed this analysis by November 30, 2020, when it submitted the Demonstration. The regulations expressly require facilities seeking an extension to evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). Moreover, this conclusion essentially acknowledges that alternative capacity may currently exist for some or all of these non-CCR wastestreams, but Gavin failed to provide any further detail about this alternative disposal capacity option, such as the date by which these piping modifications could be completed, or the reasons the existing flows cannot be rerouted immediately (or at least by April 11, 2021). Further, based on the information in the Demonstration, it appears that the Reclaim Pond may be a currently available alternative. The Reclaim Pond currently receives the total 28–33 MGD effluent from the BAP. That is, the Reclaim Pond is already receiving all of the

facility's CCR and non-CCR wastestreams after they pass through the BAP. Thus, the Reclaim Pond is hydraulically large enough for these wastestreams to be directly routed to it because it already receives them.

Considering that Gavin plans to route at least one wastestream (cooling tower blowdown) directly to Outfall 006, intensive solids settling appears not be needed for some non-CCR wastestreams. EPA understands that the Reclaim Pond has a smaller surface area (6.7 acres) than the BAP (57.8 acres) and therefore has less solids settling capacity. However, the implementation of a temporary treatment technology might be able to facilitate enhanced solids settling (if needed). It may be feasible for Gavin to implement temporary treatment combined with treatment in the Reclaim Pond to continue to meet the required water quality discharge standard to comply with its NPDES permit. Considering that the Reclaim Pond has enough hydraulic capacity to directly receive all of Gavin's non-CCR wastestreams and that Gavin does plan to reroute the cooling tower blowdown wastestream, it is unclear why Gavin failed to evaluate this option as existing alternative capacity for its non-CCR wastestreams.

ii) <u>Rerouting some non-CCR wastestreams to landfill leachate ponds surrounding the RWL</u>

Appendix Q of the Demonstration identifies several ponds surrounding the RWL as landfill leachate ponds and Figure 3-3 indicates that there are three FGD landfill leachate ponds, which each discharge via their own permitted outfall. However, these impoundments have not been evaluated as potential alternatives that could receive non-CCR wastestream(s); nor did Gavin provide the information needed for EPA to evaluate these units, such as their capacities or liner systems.

<u>iii) Implementing temporary storage tanks</u>

Finally, Gavin did not consider implementing a temporary on-site storage option, such as frac tanks. The dust collection sump is the Gavin Plant's smallest wastestream with an average flowrate of 0.002 MGD or 2,000 gal/day. Assuming a volume of 21,000 gallons for a single frac storage tank, it would take about three frac tanks per month to store this wastestream. Gavin was required to evaluate all potential alternatives, including temporary storage options, and it appears it did not evaluate whether it has sufficient footprint on-site for the tanks required or the ability to route its non-CCR wastestreams to the tanks. This technology may be technically feasible to implement at Gavin, at least for the smallest wastestreams; however, the Demonstration does not provide any evaluation.

In sum, Gavin failed to meet the requirements of 40 C.F.R. § 257.103(f)(1)(i). EPA identified existing on-site alternative capacity options for the Gavin Plant's non-CCR wastestreams. To qualify for the requested extension, Gavin was required to demonstrate that each of the Gavin Plant's generated wastestreams must continue to be managed in the BAP because no alternative capacity was available. 40 C.F.R. § 257.103(f)(1)(i). EPA is proposing to determine that Gavin did not evaluate existing alternative capacity options that may be able to manage non-CCR flows.

4. Lack of Alternative Off-site Capacity: Non-CCR Wastestreams

Gavin evaluated existing landfills and surface impoundments located within a 50-mile radius of the Gavin Plant as options for managing its combined non-CCR wastestreams. It concluded that none of these disposal facilities could manage its combined non-CCR wastestreams. EPA is proposing to find that by evaluating alternative capacity only for the combined wastestreams Gavin has failed to meet the requirements of 40 C.F.R. §§ 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v).

The analysis provided in the Demonstration considered eight off-site surface impoundments or dams and nine off-site landfills. Gavin determined that none of these would be able to receive the combined non-CCR wastestreams from the Gavin Plant. All the impoundments identified were either closing, closed, or considered high risk for flooding by the Ohio Department of Natural Resources (ODNR). Gavin used the OEPA's database of NPDES permits to search for industrial and municipal WWTPs in Ohio that could receive the combined approximately 33 MGD of CCR and non-CCR wastestreams generated at the Gavin Plant. Gavin determined that there are no off-site WWTP facilities in Ohio within 50 miles which would be able to receive its combined wastewaters. Gavin did not consider facilities across state lines in West Virginia because, due to the time required to permit a wastewater pipeline across state lines, this option is expected to take longer than other alternative capacity options considered.

Gavin only considered off-site disposal options for its combined flows; it did not consider off-site disposal options for individual wastestreams. This alone would be a basis for denial. As stated in the Part A final rule preamble, "[T]he final rule requires owners and operators to cease using the CCR surface impoundment as soon as feasible, to document the lack of both on and off-site capacity for each individual wastestream, and expressly requires that as capacity for an individual wastestream becomes available, owners or operators are required to use that capacity…" (85 FR 53541). See, 40 C.F.R. §§ 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v).

Further, based on an evaluation of the potential off-site options, it appears that some of these options may be technically feasible for at least some of Gavin's non-CCR wastestreams. For example, considering the small size of the Gavin Plant's dust collection sump, if a facility were to be identified within 50 miles that could receive this wastestream, off-site transport by trucking appears to be technically feasible. The dust collection sump has an average flow rate of

2,000 gal/day.[5] As estimated, it would take approximately three frac tanks per month to store this wastestream. Using Gavin's assumed 6,000-gallon volume for a tanker truck, it would take about three trucks per day to transport this wastestream off-site. EPA considers it reasonable for a facility to divert a wastestream off-site using three trucks per day.

EPA used OEPA's database to evaluate the NPDES permits of facilities to see if there are any that could receive the Gavin Plant's non-CCR wastestreams. EPA identified 102 facilities with an industrial wastewater permit within 50 miles of the Gavin Plant. Most these do not appear to be the type of facility that would be permitted or designed to process non-CCR wastestreams (for example, sand and gravel producers, food processors, or organic chemical plants). EPA however identified five facilities, listed below, within 50 miles of the Gavin Plant that are power generation plants and potentially have the capacity to manage at least some of the Gavin Plant's non-CCR wastestreams:

1. Ohio Valley Electric Corp Kyger Creek Station – 1.7 miles
2. American Electric Power - Racine Hydro Plant – 11.3 miles
3. Rolling Hills Generating Plant – 15.4 miles
4. Dynegy Hanging Rock Energy Facility – 44 miles
5. Waterford Energy Facility – 46.4 miles

Kyger Creek Station is unlikely to have the capacity to accept non-CCR wastestreams because the Ohio Valley Electric Corporation, the owner and operator, submitted a Demonstration to EPA under 40 C.F.R. § 257.103(f)(1). It is possible that the remaining four might be able to receive some of the Gavin Plant's non-CCR wastestreams. Gavin was therefore required to evaluate these options. For these reasons, EPA is proposing to determine that Gavin has not met 40 C.F.R. § 257.103(f)(1)(A)(1).

[5] Demonstration, Appendix A, Figure 3-3

B. Evaluation of Gavin's Analysis of Adverse Impacts to Plant Operations

In the Part A Rule, EPA stated that it is important for the facility to include an analysis of the adverse impacts to the operation of the power plant if the CCR surface impoundment could not be used after April 11, 2021. EPA stated that this is an important factor in determining whether the disposal capacity of the CCR surface impoundment in question is truly needed by the facility. EPA required that a facility provide analysis of the adverse impacts that would occur to plant operations if the CCR surface impoundment in question were no longer available. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*ii*). EPA is proposing to find that there would be adverse impacts to the power plant if the CCR impoundment could not be used after April 11, 2021.

Gavin asserted that if the BAP were required to cease receipt of waste before alternative capacity could be developed for the facility's CCR and non-CCR wastestreams, it would have to cease producing power, which would reduce the generation capacity in the state and the reliability of the electric grid.

As stated above, EPA is proposing to determine Gavin has not fully considered potential on-site capacity options to demonstrate that no alternative capacity exists. However, EPA accepts that if no capacity exists for the facility's wastestreams, and if Gavin were unable to continue using the CCR surface impoundments, there would be adverse impacts on the ability to run the associated boiler(s) such that a planned temporary outage would likely be required. But as discussed in Section IV, EPA disagrees with Gavin's claims regarding the broader impact of such an outage.

C. Evaluation of Gavin's Site-Specific Analysis for the Alternative Capacity Selected

To support the alternative deadline requested in the demonstration, the facility must submit a workplan that contains a detailed explanation and justification for the amount of time

requested. 40 C.F.R. § 257.103(f)(1)(iv)(A). The written workplan narrative must describe each option that was considered for the new alternative capacity selected, the time frame under which each potential alternative capacity could be implemented, and why the facility selected the option that it did. § 257.103(f)(1)(iv)(A)(1). The discussion must include an in-depth analysis of the site and any site-specific conditions that led to the decision to implement the selected alternative capacity. § 257.103(f)(1)(iv)(A)(1)(i).

In this section, EPA explains why it is proposing to agree with Gavin's determination that certain alternate capacity options were not feasible or would further delay the BAP's final receipt of waste and summarizes the option selected by Gavin.

In the Demonstration, Gavin presented an overview of the Gavin Plant and its surrounding on-site property. *See section 5 of the Demonstration and Figures 5-1 and 5-2 of Appendix A*. Gavin explained that its footprint of land available for new development on-site is limited by existing infrastructure, the Ohio River, streams, past mining operations, and surrounding hills and slopes. Gavin explained that it does not have land that is "readily available" for new development because, according to the Demonstration, the flat areas within the property boundary are occupied by existing units and other infrastructure or are located within stream floodplains. Gavin stated that developing its land would add an additional one to two years at least to the compliance schedule.

Gavin reviewed the alternative capacity options in the Part A final rule and conducted an analysis of their feasibility at the Gavin Plant. *See Table 5-3 of the Demonstration*. Gavin provided its estimate for the amount of time it would take to implement each technology on its site, including the amount of time needed for "preliminary technology evaluations or preliminary design studies." The most critical factors that affected Gavin's options for developing alternative

capacity on-site were the need to use existing infrastructure due to the lack of readily available land for new development and the need for the alternative capacity option to facilitate compliance with the facility's NPDES discharge permit and the Effluent Limit Guidelines (ELG) regulations.

Gavin determined that implementing a new WWTP is technically infeasible at the Gavin Plant because it would not facilitate compliance with the new ELG rules, which do not allow direct discharge of bottom ash transport water. Further, Gavin stated that a new WWTP would require at least 20 acres of flat, contiguous land and that this footprint is not readily available in the areas adjacent to the plant. Gavin determined that a new CCR surface impoundment was not feasible for similar reasons. Gavin stated that a new surface impoundment for non-CCR would need to be approximately the size of the current BAP (57.8 acres) to provide the required residence time to comply with the facility's NPDES permit; however, it did not provide technical information supporting this assertion. Similarly, a new surface impoundment for CCR would not facilitate compliance with the ELG regulations.

Gavin stated that developing its land would add an additional one to two years at least to the compliance schedule. Gavin explained that new infrastructure would involve installing distribution piping and that siting several distribution pipelines would present challenges similar to that of siting the infrastructure. For these reasons, Gavin determined that constructing a new WWTP, CCR surface impoundment, or non-CCR basin was less technically feasible than other options considered. Because developing new infrastructure would take more time than utilizing existing infrastructure, EPA is proposing to conclude that Gavin's decision to build a new PWP in the footprint of the existing BAP is the fastest technically feasible method to complete the development of the alternative capacity.

Gavin determined that conversion to dry handling, construction of a new non-CCR wastewater basin, and retrofit of a CCR surface impoundment are all feasible at the Gavin Plant. It elected to implement versions of all of these options, that is, a multiple technology system. Gavin will obtain alternative capacity for the Gavin Plant's bottom ash by converting its wet handling systems to a dry handling system. For its non-CCR wastestreams, Gavin plans to construct a new non-CCR wastewater basin, the PWP, in the footprint of the existing BAP. Gavin asserted that due to the lack of available area on-site, constructing the new non-CCR basin (the PWP) in a portion of the BAP footprint is the most technically feasible option for handling the process water non-CCR flows. Gavin's analysis identifies conversion from wet to dry handling as the only option which will facilitate compliance with the ELG regulations.

Gavin evaluated three dry handling technologies and selected underboiler drag chain conveyor (DCC) dry handling technology. Gavin believes it is the most likely to be successful because this technology has a proven reliability and has proven effective at facilities of the size and scale of the Gavin Plant.

Gavin considered constructing new infrastructure as alternative capacity for its non-CCR liquid wastestreams. Because of the lack of available space for new development, Gavin has decided to close a portion of the existing BAP by removal of CCR and to construct a new PWP in its footprint. *See Figures 5-1 and 5-2 in Appendix A of the Demonstration.*

Gavin explained that adding new infrastructure would further delay the BAP's final receipt of waste. Although Figure 5-1 shows green spaces within the property surrounding the FAR and RWL, Gavin stated that due to the many site-constraining factors, further measures would be necessary to understand the property to determine the available footprint for new infrastructure. Gavin explained that a geotechnical investigation to understand the significance of

historical mining areas and environmental studies to evaluate the impact that new infrastructure might inflict upon streams and wetland areas would need to be completed. EPA is proposing to accept Gavin's explanation that, even if sufficient footprint were available, construction of, for example, a new wastewater treatment plant, would not allow the BAP to cease receipt of waste any faster than Gavin's chosen PWP option. This is because during construction, according to Gavin, the non-CCR wastewaters would still need to be managed in the BAP,[6] regardless of which alternative capacity option is implemented. Additionally, because developing new infrastructure would take more time than utilizing existing infrastructure, EPA is proposing to conclude that Gavin's decision to build a new PWP in the footprint of the existing BAP is the fastest technically feasible method to complete the development of the alternative capacity.

Gavin intends to temporarily reroute its non-CCR process flows during construction, but it has not determined how this will be achieved. Gavin stated in the Demonstration that certain flows might be routed through treatment, to the Reclaim Pond, or directly to Outfall 006. Gavin explained that, "a separate contractor may be selected to procure and install the chemical treatment anticipated for the temporarily rerouted process water flows. Gavin anticipates that the bidding period, evaluation, and award will take approximately 9 to 10 weeks. This contractor will be responsible for designing the temporary treatment system." According to Gavin's schedule, these temporary reroutes will be implemented during construction of the PWP, which it expects will be from May 4, 2023, to November 2024. Gavin explained that once the PWP is ready around November 2024, it will receive the non-CCR flows.

[6] Demonstration, Table 5-3

The construction of the PWP in the footprint of the existing BAP may impact the unit's ability to meet the closure performance standard for leaving CCR in place § 257.102(d). These concerns are discussed below in Section III.E of this proposal.

In conclusion, EPA is proposing to determine that Gavin has sufficiently justified its choice to construct a new PWP in the footprint of the BAP, provided it is able to meet the performance standard for closure by leaving CCR in place. EPA's proposed acceptance of Gavin's justification of its decision to build the PWP in the footprint of the existing BAP should not be construed as EPA's approval of the detailed construction design or potential long-term environmental impacts of the proposed alternative capacity. EPA was unable to evaluate this potential risk due to the lack of detailed design at this point. Gavin is responsible for meeting the closure performance standard of 40 C.F.R. § 257.102(d), regardless of its chosen alternative capacity technology. Because the system conceptual design and engineering are completed, based on the information in the Demonstration, EPA is proposing to conclude that the selected multiple technology system is the option with the shortest compliance schedule.

D. Evaluation of Gavin's Justification for Time Requested

Facilities must justify the amount of time requested in the demonstration as the fastest technically feasible time to develop the selected alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*iii*). The workplan must contain a visual timeline and narrative discussion to justify the time request. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). The visual timeline must clearly indicate how each phase and the steps within that phase interact with or are dependent on each other and the other phases. Additionally, any possible overlap of the steps and phases that can be completed concurrently must be included. This visual timeline must show the total time needed to obtain the alternative capacity and how long each phase and step is expected

to take. The detailed narrative of the schedule must discuss all the necessary phases and steps in the workplan, in addition to the overall time frame that will be required to obtain capacity and cease receipt of waste. The discussion must include 1) why the length of time for each phase and step is needed, 2) why each phase and step must happen in the order it is occurring, 3) a discussion of the tasks that occur during the specific step, and 4) the tasks that occur during each of the steps within the phase. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). This overall discussion of the schedule assists EPA in understanding whether the time requested is warranted. Finally, facilities must include a narrative on the progress made towards the development of alternative capacity as of the time the demonstration was compiled. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*4*). This section of the Demonstration is intended to show the progress and efforts the facility has undertaken to work towards ceasing placement of waste in the CCR surface impoundment and to determine whether the submitted schedule for obtaining alternative capacity was adequately justified at the time of submission.

Gavin has projected that it will cease receipt of CCR wastestreams to the BAP by March 2023. EPA has evaluated the time requested and the associated workplan and has identified no steps that can be completed more quickly or that are otherwise unreasonably long. EPA is proposing to find that March 2023 is the fastest technically feasible for the plans presented.

Gavin has requested a date of May 4, 2023, to cease receipt of non-CCR wastestreams to the BAP. Although Gavin has made progress in developing alternative capacity for its non-CCR wastestreams, it appears that the cooling tower blowdown could be diverted from the BAP sooner than May 4, 2023. EPA is proposing to determine that Gavin did not demonstrate that the time requested to divert the cooling tower blowdown from the BAP is the fastest technically feasible. Further, for the majority of the other non-CCR wastestreams, the Demonstration fails to

provide Gavin's plan to divert these wastestreams from the BAP. Therefore, EPA is proposing to determine that Gavin has not supported its requested deadline of May 4, 2023, to cease receipt of non-CCR wastestreams, that the plans presented are not the fastest technically feasible, and that for these reasons Gavin has not met 40 C.F.R. § 257.103(f)(1)(iv)(A)(1)(iii).

1. Time requested for final receipt of CCR wastestreams

Gavin stated that it requires the use of the BAP after April 11, 2021, due to the wastestreams currently managed in the unit. Gavin stated in the Demonstration that completing conversion from wet to dry ash handling systems (from technology evaluation to construction) would require 51 months. Gavin explained that it began this process in March 2019 and that because it was unable to complete this process before April 11, 2021, it was unable to cease CCR flows to the BAP before April 11, 2021.

Gavin has requested to continue to manage its bottom ash transport water in the BAP until March 2023. The basis for this request is the timing of the final major outage required to install the AHE dry handling system in Unit 2. Gavin stated "Unit 1 will cease sluicing CCR to the BAP at the start of the major outage in 2022. Unit 2 will cease sluicing CCR to the BAP at the start of the Unit 2 major outage in 2023." Gavin requires pre-coordinated approval from its Regional Transmission Organization (RTO) to be able to take a generating unit offline. Gavin explained in the Demonstration that it has "already coordinated preliminary outage dates with PJM [PJM Interconnection LLC], which will be confirmed at least 6 months in advance."

As previously explained, Gavin currently wet sluices the bottom ash from its two power generating units to the BAP surface impoundment. Gavin plans to replace this by installing a dry handling DCC system. The dry handled ash will be sent to the RWL, allowing the BAP to cease receipt of all CCR wastestreams. Gavin's plan consists of one major phase: conversion of the

CCR handling systems in each unit from wet to dry. This phase will be completed concurrently with the construction of the PWP and closure of the BAP.

For all construction, Gavin's schedule is based on a proposed 5-day work week with weekend work as allowed to recover from reasonable weather delays. The workplan mentions that weather may delay the construction activities.

Because Gavin has already made progress towards implementing its planned dry handling ash system, EPA is proposing to conclude that it is the option that will most quickly result in alternative disposal capacity for the CCR wastestreams, namely bottom ash transport water, currently managed in the BAP. Gavin has evaluated and chosen its dry handling technology. Gavin stated that in June 2020 it selected its contractor who is tasked with detailed engineering, design, and fabrication of the AHE dry handling technology. This AHE supply contractor was scheduled to begin work in November 2020. Gavin has begun the process of choosing a contractor for the installation of the AHE system. Also, Gavin has selected a contractor to perform the additional plant modifications needed prior to the installation of the AHE.

Finally, Gavin has preliminarily coordinated the dates of its major outages with PJM, its RTO. It is awaiting final confirmation, which it expects to receive at least six months before the planned outage. EPA understands that Gavin requires pre-arranged approval from PJM to take a unit offline. Therefore, it is not possible for Gavin to cease sluicing bottom ash to the BAP more quickly than the dates that it has coordinated with PJM.

As outlined, Gavin has made progress towards obtaining alternative capacity for its CCR wastestreams currently managed in the BAP. EPA believes it to be on a critical path that will allow it to cease receipt of CCR waste by March 2023. EPA has evaluated the time requested and

has identified no steps that can be completed more quickly or that are otherwise unreasonably long. Given the chosen methods for obtaining alternative capacity for the wastestreams, the requested deadline of March 2023 appears to be the fastest technically feasible for the BAP to cease receipt of CCR wastestreams.

2. Time requested for final receipt of non-CCR wastestreams

Gavin has requested to cease receipt of all non-CCR wastestreams in the BAP on May 4, 2023. The basis of the request for this date is that this is when Gavin anticipates completing the reroute of its cooling tower blowdown wastestream from the BAP to Outfall 006.

Gavin's plan to develop alternative capacity for its non-CCR wastestreams consists of one major phase: construction of the PWP in the footprint of the existing BAP. This phase has been planned to be implemented concurrently with the conversion from a wet to dry ash handling system for CCR. Relevant to construction of the PWP, Gavin will execute a hybrid closure of the BAP by removing all of the CCR within the footprint of the planned PWP, and by consolidating and capping the CCR in the remaining footprint of the BAP. The PWP will be constructed in the portion that will be closed by removal. Gavin estimates that the new PWP will occupy about 37 acres and the encapsulated CCR will occupy about 17 acres. In addition to construction of the PWP, Gavin will need to reroute its largest wastestream, the cooling tower blowdown, directly to Outfall 006. Gavin will also need to manage the other non-CCR flows during construction of the PWP to comply with its NPDES permit.

Gavin's basis for requesting May 4, 2023, as the BAP's final receipt of non-CCR wastestreams is that this is the date on which Gavin anticipates being able to reroute its cooling tower blowdown wastestream from the BAP to Outfall 006. Because the PWP, which will handle certain non-CCR wastestreams in the future, is not expected to be operational until November

2024, Gavin plans to route the cooling tower blowdown directly to its permitted Outfall 006. In the Demonstration, Gavin writes:

> "The process to construct the new piping and cooling tower blowdown outlet structure will begin in March 2023 and be complete by 4 May 2023, which is the basis of Gavin's request for a site-specific cease-receipt-of-waste deadline."

Based on the information contained in the Demonstration, it appears that Gavin's proposed schedule is not the fastest technically feasible to develop alternative capacity, as required by 40 C.F.R. § 257.103(f)(1)(iv)(A)(2). Specifically, based on the information in the Demonstration it appears that it is possible for it to reroute the cooling tower blowdown more quickly than May 4, 2023. Gavin did not include the steps that will be required to reroute the cooling tower blowdown on its visual timeline (*see Appendix A of the Demonstration*). EPA has extracted what appears to be Gavin's plan to complete this modification from the written narrative, as described below.

It appears Gavin anticipates that it will take between 10 and 11 months[7] to complete the reroute of the cooling tower blowdown to Outfall 006. Specifically, the Demonstration indicates a duration of six months of design and permitting for this modification,[8] a duration of three months for procurement,[9] and a two-month construction duration.[10] EPA could identify no other preceding steps that need to occur for this modification and therefore it is unclear what is preventing Gavin from starting this process immediately (and what prevented it from beginning it earlier).

---

[7] If Gavin can overlap its permitting and design with procurement by one month, it appears the total time required would be 10 months. If this overlap is not possible, 11 months would be required to complete this modification.
[8] Per the duration estimated by the Gavin for NPDES permit modification, section 6.2.3.5, page 34 of the Demonstration
[9] Per the duration estimated by the Gavin for contractor selection and one month overall with permitting, section 6.3.2.5, page 34 of the Demonstration
[10] Per the duration estimated by the Gavin for this construction, section 6.3.2.6, page 36 of the Demonstration

Considering that the reroute of the cooling tower blowdown is the basis for Gavin's requested date to cease receipt of waste to the BAP, Gavin was required to include a detailed schedule of the fastest technically feasible time to complete the measures necessary for alternative capacity to be available for this wastestream. EPA is proposing to determine that Gavin has not met this requirement, 40 C.F.R. § 257.103(f)(1)(iv)(A)(2). Further, it appears Gavin could begin the process of implementing this modification immediately and could complete it before its requested date of May 4, 2023. Regarding Gavin's other non-CCR wastestreams (i.e., other than the cooling tower blowdown), EPA notes that Gavin has not yet determined how it will manage these wastestreams during construction of the PWP. Gavin states in the Demonstration that:

> "The plan to temporarily reroute the existing flows during construction in the BAP is pending detailed engineering. Gavin will evaluate each process flow and the potential to temporarily route process water through treatment, directly to the Reclaim Pond, or to Outfall 006…. To combine the cooling tower blowdown with the Reclaim Pond discharge, a new concrete outlet structure is planned to tie the lines together. The remaining flows, primarily sumps from various plant locations, would require new piping to a temporary treatment system. As discussed in Section 6.3.2.3, the chemical treatment package has not yet been designed, therefore the exact nature of the planned temporary treatment system is to be determined."

This means that Gavin has not yet determined whether these wastestreams could be routed directly to the permitted outfall or the Reclaim Pond, or would require a temporary treatment system. Critically, Gavin apparently has not determined how it will divert its remaining non-CCR wastestreams from the BAP during construction of the PWP, or the amount of time in which these reroutes might take place. EPA accepts that, because Gavin plans to route the sluiced pyrite wastestream through the AHE system, at least the pyrite wastestream cannot be diverted until the dry handling system is complete. However, for the remaining non-CCR

wastestreams, the Demonstration contains no explanation for failing to complete the necessary engineering and design calculations to support its estimated deadline.

Gavin was required to present a detailed plan of the fastest technically feasible schedule to complete the measures necessary for its alternative capacity technology to be available.[11] As stated in the Part A final rule preamble, "[T]he final rule requires owners and operators to cease using the CCR surface impoundment as soon as feasible, to document the lack of both on and off-site capacity for each individual wastestream, and expressly requires that as capacity for an individual wastestream becomes available, owners or operators are required to use that capacity…" (85 FR 53541). See, 40 C.F.R. §§ 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v). Because it has failed to do so and because the information contained in Demonstration suggests that the non-CCR wastestreams could in fact be diverted away from the BAP sooner, EPA is proposing to determine that Gavin has not demonstrated that the amount of time requested is the fastest technically feasible to complete the measures necessary to obtain alternative capacity.

The timing of the diversion of these wastestreams from the BAP carries with it a potential environmental impact. As stated, the BAP receives 23–28 MGD of non-CCR flows. If more wastewater is going to the BAP, then the volume of water contained in the BAP will be higher than if less wastewater was going to the BAP. A higher water volume in the BAP means there will be more pressure (hydraulic head) pushing down on the bottom of the impoundment, which increases the risk of water percolating down into the silt/clay layer below the unlined BAP, and an attendant release of CCR constituents. As further discussed below in Section III.E of this proposal, there is evidence that the BAP is releasing CCR constituents because the BAP groundwater monitoring network has detected statistically significant increases (SSIs). Thus, the

[11] 40 C.F.R. § 257.103(f)(1)(iv)(A)(1)(iii) and 40 C.F.R. § 257.103(f)(1)(iv)(A)(2)

earlier the BAP stops receiving any wastestream, particularly larger wastestreams such as the cooling tower blowdown, the sooner it would reduce the risk of further releases from the BAP.

3. Progress towards achieving alternative capacity

Gavin has made progress towards developing the PWP and rerouting the Gavin Plant's non-CCR flows. Gavin has completed some of the subsurface geotechnical investigations required to support design of the new PWP. In the work that it has designated as Phase 1-Part 1, Gavin has, "investigated the BAP to estimate characteristics of the CCR material, identify the interface elevation between the CCR material and underlying clay layer, and to measure the geotechnical parameters of these materials." In Phase 1-Part 2 Gavin has completed "geotechnical investigations: borings into subsurface in areas located around perimeter of BAP embankment and install piezometers within CCR material." This was done to inform construction of the berm in the middle of the BAP. Gavin has also commissioned a pond closure study to model the closure and repurposing of the BAP (water treatment and pond settling model and if the PWP will meet NPDES discharge limits).

E. Evaluation of Gavin's Compliance

The Part A Rule requires that a facility must be in compliance with all the requirements in 40 C.F.R. part 257 subpart D in order to be approved for an extension to the cease receipt of waste deadline. 40 C.F.R. § 257.103(f)(1)(iii). Various compliance documentation must be submitted with the Demonstration for the entire facility, not just for the CCR surface impoundment in question. 40 C.F.R. § 257.103(f)(1)(iv)(B). Additionally, EPA evaluated the information presented in the narrative relating to the closure or retrofit of the impoundment and the development of the new alternative disposal capacities to ensure compliance with the CCR regulations.

The first group of compliance documents required to be included in the Demonstration are related to documentation of the facility's current compliance with the requirements governing groundwater monitoring systems. The Agency required copies of the following documents: 1) map(s) of groundwater monitoring well locations (these maps should identify the CCR units as well); 2) well construction diagrams and drilling logs for all groundwater monitoring wells; 3) maps that characterize the direction of groundwater flow accounting for seasonal variation; 4) constituent concentrations, summarized in table form, at each groundwater monitoring well monitored during each sampling event; and 5) description of site hydrogeology including stratigraphic cross-sections. 40 C.F.R. § 257.103(f)(1)(iv)(B)(*2*)-(*4*).

The second group of documents EPA required was the facility's corrective action documentation, if applicable, and the structural stability assessments. A facility must submit the following documentation: the corrective measures assessment required at 40 C.F.R. § 257.96, progress reports on remedy selection and design; the report of final remedy selection required at 40 C.F.R. § 257.97(a); the most recent structural stability assessment required at 40 C.F.R. § 257.73(d), and the most recent safety factor assessment required at 40 C.F.R. § 257.73(e). 40 C.F.R. § 257.103(f)(1)(iv)(B)(*5*) through (*8*).

1. Closure of the FAR and the BAP

The regulations provide two options for closing a CCR unit: closure by removal and closure with waste in place. 40 C.F.R. § 257.102(a). Both options establish specific performance standards. 40 C.F.R. § 257.102(c)-(d). Gavin intends to close both the FAR and the BAP by closing with waste in place. Based on the available information, EPA is proposing to determine that Gavin has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. § 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

EPA evaluated the information provided in the Demonstration, as well as in the written closure plans and other documents posted on Gavin's publicly accessible CCR website for the FAR. After review of this information, EPA is proposing to determine that Gavin has not documented how the closure performance standards will be achieved. There are no details in the closure plan posted on Gavin's CCR website or any other document provided as part of the Demonstration that will allow EPA to determine that the closure performance standards will be met, in light of site conditions, at the impoundment. Therefore, EPA is proposing that Gavin has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. § 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

The Demonstration explains that closure of the FAR is nearly finished and is expected to be completed in 2021. The October 2016 closure plan states that closure of the FAR began in 2015. As required by the regulations, Gavin posted its initial closure plan to its CCR website in October 2016, and the closure plan has not been amended since its initial posting.

EPA reviewed available information to determine whether any portion of the FAR is in contact with groundwater and, if so, whether Gavin has explained how the closure performance standards will be achieved for the impoundment. EPA's evaluation considered information in the Demonstration and its appendices, as well as the History of Construction, the Dam & Dike Inspection Report from 2016, the Closure Plan from 2016, and the annual Groundwater Monitoring Corrective Action (GWMCA) Report from 2019. After reviewing this information, EPA is preliminarily determining that the FAR unit is in contact with groundwater. As a consequence of this preliminary determination, EPA is also proposing to determine that Gavin has failed to meet the requirement to develop an adequate closure plan and to demonstrate that the performance standards will be achieved during closure of the FAR.

EPA also evaluated the Demonstration and closure-related information on Gavin's CCR website to determine whether Gavin has adequately explained how the closure performance standards will be achieved for the BAP. Gavin will implement a hybrid closure approach by leaving CCR in place and closing the remaining portion of the BAP by removal of waste. Following the removal of waste, Gavin explains that the new PWP will be constructed in this portion of the BAP footprint. Gavin did not provide enough detail in the Demonstration for EPA to determine whether the closure of this unit will meet the closure performance standard of 40 C.F.R. § 257.102(d)(1). Consequently, EPA is preliminarily determining that the proposed PWP potentially will impact the BAP's ability to meet the closure performance standard of 40 C.F.R. § 257.102(d)(1)(i).

(a) Intersection between FAR and Groundwater

The following information indicates that at least a portion of the CCR in the FAR is saturated with groundwater.

First, the static water levels measured in at least seven piezometers indicate that the groundwater elevation along the fly ash dam is above the base of the unit and is therefore high enough to be in contact with CCR in the unit. The FAR compliance documents indicate that the elevation of the base of the FAR (i.e., where the sluiced ash is stored) ranges from 600 to 657 feet above sea level. The groundwater was consistently measured in seven of eight wells at levels between 640 and 660 feet. The evidence for this is as follows.

The lowest elevation of the FAR is given as 600 feet.[12] This is consistent with Profile 3-G Dr. No. 12-3000F-1 of the History of Construction (October 2016),[13] which shows the

[12] History of Construction, Stingy Run Flyash Pond, October 2016, section 10.0
[13] History of Construction, Stingy Run Flyash Pond, October 2016, Design Drawings, Dam Raising, For Phase II, Stingy Run, Fly Ash Retention Pond, Dr. No. 12-3000F-1

elevation of the ash at 600 feet near where the piezometers are installed. Additionally, section 5.0 of the Dam & Dike Inspection Report (October 2016) indicates that the elevation of the base of the FAR varies from about 602 feet to 657 feet.[14] EPA estimates that the average bottom elevation of the pond is 646 feet.[15] Figure 10b of Appendix C of the Dam & Dike Inspection Report (October 2016)[16] is a graphical depiction of the elevations of eight observation wells over time (the figure also shows the elevation of the impounded water). The wells are installed either along the crest of the dam or on the downstream edge of the dam (the observation well locations are shown on Figure 10a of Appendix C of the Dam & Dike Inspection Report (October 2016), DR. NO. 12-300B-1 of Attachment B of the History of Construction,[17] and the following cross-sections from Attachment B of the History of Construction: DR. NO. 12-3000D-1, Dr. No 12-3000E-1). Figure 10b[18] indicates that from April 1988 to November 2016, the groundwater elevations in the piezometers were fairly consistent. All, except for OB-29 and OB-36, show that groundwater was consistently above 640 feet. Four (OB-28, OB-31, OB-32, and OB-35) consistently measured above 660 feet. OB-29 consistently measured groundwater at around 630 feet. Therefore, if the elevation of the ash is presumed to range between 600 and 657 feet as shown in Profile 3-G DR. NO. 12-3000F-1 of the History of Construction (October 2016), all piezometers, except for OB-36, consistently indicated groundwater was above the level of the ash.

---

[14] Dam & Dike Inspection Report, Bottom Ash Complex, Stingy Run Fly Ash Dam, November 2016, section 5.0

[15] Closure Plan, Stingy Run Flyash Pond, Gavin Plant, Cheshire Ohio, October 2016, sections 5.0 and 6.0. Section 5.0 states that the maximum inventory of CCR material is "approximately 19,800 acre-ft" at a "maximum fly ash elevation of 725 feet." Section 6.0 states, "The largest CCR area requiring final cover is approximately 250 acres." Based on this, EPA estimated the average bottom elevation of the pond to be 646 ft.

[16] Dam & Dike Inspection Report, Bottom Ash Complex, Stingy Run Fly Ash Dam, November 2016, Appendix C, Figure 10b

[17] History of Construction, Stingy Run Flyash Pond, October 2016

[18] 2016 Dam & Dike Inspection Report, Bottom Ash Complex, Stingy Run Fly Ash Dam, October 2016, Appendix C, Figure 10b

Additionally, Section 6.2.1 of the 2016 Dike and Dam Inspection Report indicates that the water levels in the observation wells installed on and around the crest of the dam are consistently high enough to be in contact with CCR in the impoundment:

> "A historical plot of the observation wells water elevation is provided in Figure 10b. In the last 15 years, the static water levels are steady with very minor fluctuation…At present, the water level in the flyash pond (near the dam) is maintained at approximately 664 (+/1) feet. Piezometer OB-28 is located at the crest of the dam on the north side and installed to the depth of the bottom ash drain. The static water elevation readings closely match the pond level."

Therefore, these data and accompanying narrative indicate that the groundwater level near and across the dam is high enough to be in contact with CCR.

Second, descriptions of the site groundwater conditions indicate that there is a natural water table higher than the base of the unit in some areas. The FAR was constructed in the Stingy Run stream valley. The presence of surface water may indicate a high groundwater table; often, ground and surface water are hydrologically connected, and groundwater may directly supply (recharge) surface water. Further, groundwater conditions are described in Section 3.5 of the Proposed Dam Raising for Phase II Stingy Run Fly Ash Retention Pond (American Electric Power Service Corporation, March 1986).[19] The report states, "In general, ground-water levels are found to be high in both the valley floor and in the reservoir rim. These levels are generally higher than the proposed maximum operating pool of el. 726 ft." Additionally, during construction operations, water had to be managed using pumps and a coffer dam.[20] This means that at the time of construction, naturally occurring water was present in the stream valley above where the ash is currently stored. This is further indication that currently there may be

[19] This document can be found within the History of Construction, Stingy Run Flyash Pond, October 2016, Attachment B.

[20] This is described in Chapter III, "Diversion and Care of Water" of the "Final Report, Gavin Fly Ash Dam and Fly Ash Line Support System, Volume I" done by Hazra Engineering (January 1975). This document can be found in the History of Construction, Stingy Run Flyash Pond, October 2016, Attachment B.

groundwater high enough to be in contact with ash. Additionally, section 2.1 of the FAR 2019 Annual GWMCA Report states: "Hydrogeology within the FAR is characterized by a shallow zone of saturation that overlies an upper aquifer system that consists of sandstone and interbedded clay and shale units." Collectively, this information indicates that there is a high groundwater table in the vicinity of the FAR, and that the groundwater level is higher than the level of the ash.

Finally, although Gavin indicates in the FAR Annual GWMCA reports that there are layers of low permeability in between the uppermost aquifer and the base of the FAR, the History of Construction Report states that there is a possible hydraulic connection between the uppermost aquifer and the bottom of the FAR. As stated in Section 3.6 of the "Proposed Dam Raising for Phase II Stingy Run Fly Ash Reservoir" (American Electric Power Service Corporation, March 1986) from the History of Construction Report (October 2016):

> "As discussed in the lithologic descriptions, water pressure test data show that the clay shales in the reservoir area are relatively impermeable. Thin beds of sandstone found in two rock units (5 and 7) contain open joints and are permeable, especially when the units are found at the bedrock surface. These may provide a path for potential seepage from the reservoir particularly in the areas of thin divides."

Notably, the FAR is unlined,[21] thus there is no engineered barrier installed between the uppermost aquifer and the ash in the bottom of the FAR. Based on the evidence of high groundwater elevations at and around the FAR, EPA is proposing to determine that there is hydraulic connection between the uppermost aquifer and the fly ash located on the bottom of the FAR and that at least a portion of the ash in the unit is saturated with groundwater.

(b) Compliance with the closure performance standards: FAR and BAP

Fly Ash Reservoir

[21] Liner Design Certification (Fly Ash Pond), October 2016

EPA evaluated the Demonstration and closure-related information on Gavin's CCR website to determine whether Gavin has adequately explained how the closure performance standards will be achieved during closure of the FAR in light of the evidence that at least a portion of the impoundment appears to be in contact with groundwater. EPA's preliminary determination is that the explanation is inadequate. EPA is therefore proposing to determine that Gavin has failed to meet the requirement to develop an adequate closure plan and to demonstrate that the performance standards will be achieved during closure of the FAR. 40 C.F.R. § 257.102(b), (d)(1)-(2). In the case of the FAR, this is particularly important because closure of the unit is ongoing and planned to be completed in 2021.

The CCR closure requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. The general performance standards under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i). Finally, the regulations require facilities to develop a written closure plan that describes the steps necessary to close the

CCR unit, consistent with recognized and generally accepted good engineering practices. 40 C.F.R. § 257.102(b)(1). The plan must also include a written narrative describing how the unit will be closed in accordance with the section, or in other words, how the closure will meet the performance standards in the regulation. 40 C.F.R. § 257.102(b)(1)(i).

Neither the closure plan posted on Gavin's website nor the Demonstration describe the steps that will be taken to close the unit consistent with generally recognized good engineering practices, as required by 40 C.F.R. § 257.102(b). Nor does either document that the closure of the FAR meets the requirements of 40 C.F.R. § 257.102. For example, the Demonstration provides insufficient details on how free liquids were to be eliminated from the FAR, and the October 2016 closure plan for the FAR only states that "[a]s part of closure of the CCR unit, all free water will be removed."[22] Such a summary discussion does not meet requirements for a closure plan as laid out in 40 C.F.R. § 257.102(b). And if EPA is correct that the base of the impoundment intersects with groundwater, the closure plan would need to have discussed the engineering measures taken to ensure that the groundwater had been removed from the unit prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the freestanding liquid in the impoundment and to all separable porewater in the impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater.

[22] "Closure Plan, C.F.R. 257.102(b), Stingy Run Flyash Pond, Gavin Plant, Cheshire, Ohio." October 2016. Page 6.

Similarly, neither the Demonstration nor the closure plan document how the FAR will be closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the top, sides, and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. In this scenario, the CCR will be in continuous contact with water. This contact between the waste and groundwater provides a potential for waste constituents to be dissolved and to migrate out of (or away from) the closed unit. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit. The Demonstration does not discuss how this performance standard will be achieved for the FAR, and the October 2016 closure plan for the FAR only addresses the permeability characteristics of the final cover system with respect to this performance standard.[23]

[23] *Id*. Page 5.

In summary, based on available information, EPA cannot determine whether the closure performance standards will be met. This is a violation of 40 C.F.R. § 257.102(b), which requires facilities to develop a written closure plan that documents the steps that will be taken to complete closure and to ensure the performance standards are met. It may also demonstrate that Gavin has failed to comply with the performance standards for closure with waste in place in 40 C.F.R. § 257.102(d). EPA is therefore proposing to determine that Gavin has failed to comply with 40 C.F.R. § 257.102(b), and that Gavin has not demonstrated compliance with the performance standards applicable to the closure of the FAR in 40 C.F.R. § 257.102(d)(1)-(2). EPA is also proposing to find that Gavin's plans for closure are inconsistent with the plain language of the requirement that to obtain approval, a facility must demonstrate that it will maintain compliance with all the requirements of subpart D. 40 C.F.R. § 257.103(f)(1)(viii).

Bottom Ash Pond

EPA evaluated the Demonstration and closure-related information on Gavin's CCR website to determine whether Gavin has adequately explained how the closure performance standards will be achieved for the BAP. Gavin did not provide enough detail in the Demonstration for EPA to determine whether the closure of this unit will meet the closure performance standard of 40 C.F.R. § 257.102(d)(1). Specifically, based on the information presented in the Demonstration, it appears that Gavin may not meet the closure performance standards in 40 C.F.R. § 257.102(d)(1)(i): "The owner or operator … must ensure that, at a minimum, the CCR unit is closed in a manner that will: Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." Gavin has chosen to implement a hybrid closure approach for the BAP. The Demonstration states that

approximately 37 acres will be closed by removal of CCR (and repurposed as the future PWP) and 17 acres will be closed by leaving CCR in place. The designs submitted with the Demonstration[24] and written descriptions in the Demonstration[25] indicate that an earthen berm will separate the impounded wastewaters in the PWP from the consolidated CCR in the closed BAP.

EPA understands that the designs submitted with the Demonstration are preliminary and that Gavin may not have completed its construction-level engineering designs for the PWP. However, no information was provided about the implementation engineering controls (e.g., liner system) that would prevent water from laterally infiltrating through the earthen berm from the PWP to the closed BAP. Based on the absence of any discussion, it appears that there will not be engineering controls installed in the PWP that would prevent this infiltration. Thus, EPA is concerned about the potential release of CCR constituents to groundwater should impounded non-CCR wastewaters in the new PWP migrate through the earthen berm into the consolidated CCR.

In summary, EPA cannot determine based on information available that the closure performance standards will be met. EPA is proposing to determine that Gavin has not met the standard of 40 C.F.R. § 257.102(b), which requires facilities to develop a written closure plan that documents the steps that will be taken to complete closure and to ensure the performance standards are met. Further, EPA is proposing to determine that Gavin has not demonstrated compliance with the performance standards applicable to the closure of the BAP in 40 C.F.R. § 257.102(d)(1). EPA is also proposing to find that the inclusion of the above plans for closure is inconsistent with the plain language of the requirement that, to obtain approval, a facility must

[24] Demonstration, Appendix A, Figure 6-1
[25] Demonstration, section 6.1.2

demonstrate that it will maintain compliance with all the requirements of subpart D. 40 C.F.R. § 257.103(f)(1)(viii).

(c) Requirement to Amend the Written Closure Plan- FAR

The regulations specify that a facility must amend the written closure plan whenever there is a change in the operation of the CCR unit that would substantially affect the written closure plan or whenever unanticipated events necessitate a revision of the written closure plan, whether such an event occurs before or after closure activities have commenced. In addition, the regulations require that the closure plan must be amended at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. 40 C.F.R. § 257.102(b)(3)(ii) and (iii). Based on information in the Demonstration and its publicly accessible CCR website, Gavin has not amended its closure plan for the FAR as required.

As stated in the Demonstration and other closure-related documents, closure of the FAR began in 2015 and is nearly complete. While the October 2016 closure plan provided some information on the elements that must be addressed in the closure plan, additional information is needed or should have been updated. EPA would expect these details to be documented and available in a closure plan for an impoundment for which closure is nearly complete. For example, Gavin's closure plan does not document how the closure performance standards specified in 40 C.F.R. § 257.102(d)(1)-(2) are achieved based on site and unit characteristics. Another example is that the October 2016 closure plan states that the FAR "should be closed by 2020" but does not describe the sequential steps and major milestones that will be taken to close the FAR as required by 40 C.F.R. § 257.102(b)(1)(vi). In contrast, the Demonstration acknowledges that closure of the FAR is scheduled "to be completed no later than 2021" and a

separate document posted to the CCR website indicates that FAR closure was expected in March 2021 and that the date has changed from initial estimates.[26] EPA is therefore proposing to determine that Gavin has failed to amend the written closure plan to document the measures it has taken to meet the closure requirement and provide an updated, and accurate, schedule for completion of closure activities, and thus has failed to demonstrate that the facility is in compliance with the requirements of 40 C.F.R. part 257, subpart D, as required by 40 C.F.R. § 257.103(f)(1)(iii).

2. Groundwater Monitoring Compliance

The regulations require facilities to submit several groundwater monitoring compliance documents as part of their Demonstrations so that EPA can thoroughly evaluate the groundwater monitoring network and the site hydrogeology for every CCR unit at the facility.

(a) Groundwater compliance at the BAP

EPA evaluated the Demonstration and its appendices as well as the 2017 and 2019 BAP GWMCA Reports, the Groundwater Monitoring System P.E. Certification, the Safety Factor Assessment, and the History of Construction.

EPA is proposing to determine that the groundwater monitoring program for the BAP is inadequate for multiple reasons and therefore does not adequately demonstrate compliance with the regulations. First, design of the groundwater monitoring system at the BAP is not adequately supported by thorough characterization of groundwater flow direction. 40 C.F.R. § 257.91(b)(1). Second, the statistical comparisons between background and compliance well data have not been conducted in accordance with 40 C.F.R. §§ 257.93(a), 257.93(f)(3), or 257.94(c). Third, the Alternative Source Demonstrations (ASDs) in the 2019 Annual GWMCA Report fail to

[26] "Fly Ash Reservoir Demonstration." September 9, 2020. Page 4.

demonstrate a source other than the BAP caused detections of SSIs. 40 C.F.R. § 257.95(g)(3)(ii). Finally, the BAP 2018 Annual GWMCA was not available on the facility website at the time this proposal was developed, as required by 40 C.F.R. § 257.107(h)(1).

i. Design of monitoring system is unsupported by site-specific data

In order to design a groundwater monitoring system that will accurately characterize background groundwater quality, as well as groundwater at the downgradient waste unit boundary, it is necessary to characterize groundwater flow direction. Accordingly, the regulations require that the number, spacing, and depth of groundwater monitoring systems must be determined based upon site-specific technical information listed in 40 C.F.R. § 257.91(b), which includes groundwater flow direction and rate.

EPA is proposing to determine that the design of the groundwater monitoring system at the BAP is not adequately supported by thorough characterization of groundwater flow direction. Site-specific data that were available were not considered in characterization of groundwater flow direction. Seasonal flow reversals are depicted on maps in Annual GWMCA Reports but their potential impacts on background wells are not discussed. Additionally, EPA identified two extraction wells near the BAP, but any potential effects on groundwater flow were not discussed. Additionally, evidence of mounding is not included in the characterization of groundwater flow direction.

Site-specific data about seasonal flow reversals in the vicinity of the BAP are documented in Annual GWMCA Reports.[27] Typically, groundwater flows in a northeastern direction.[28] But when the Ohio River is high, groundwater flows to the northwest (i.e., from the

[27] Gavin BAP 2017 Annual GWMCA Report, January 2018, Figure 3; Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Figure 4-3

[28] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Figure 4-3 and section 5.3

Ohio River towards the BAP[29]). Two of the designated background wells (MW-06 and BAC-01) are located approximately 125 feet from the western perimeter of the BAP.[30] When the typical groundwater flow direction reverses, background wells MW-06 and BAC-01 may become downgradient of the BAP. This creates a potential for these wells to be impacted by releases from the BAP.

The Ohio Department of Natural Resources Well Log database shows two extraction wells (#2036783 and #2036784) located near the northern border of the BAP.[31] [32] These wells are owned by Gavin, however it is unclear if these are active and they are not discussed in GWMCA Reports for the BAP. Extraction wells can pump groundwater at high volumes and rates, lowering the groundwater elevation at the point where the extraction well is located. This lowered groundwater elevation is known as drawdown. Drawdown from extraction wells can cause nearby groundwater to flow toward the extraction well from all directions; this would be depicted as a small circular area on a groundwater potentiometric surface map where groundwater flows into the center of the circle (i.e., a cone of depression). Because the extraction wells are near the northern boundary of the BAP, the extraction wells could significantly alter groundwater flow direction and rate at the waste boundary. If these wells are active or were after the groundwater monitoring program was initiated, pumping rates and drawdown levels would need to be incorporated into groundwater flow maps to accurately characterize groundwater flow at the BAP.

[29] Gavin BAP, 2019 Annual GWMCA Report, revised October 2020, Appendix B, section 3.1
[30] Gavin BAP 2017 Annual GWMCA Report, January 2018, Figure 3
[31] Well Log and Drilling Report, ODNR, March 2012, Well Log Number 2036784
[32] Well Log and Drilling Report, ODNR, March 2012, Well Log Number 2036783

Groundwater mounding occurs when water is discharged into soil and infiltrates into the uppermost aquifer at a rate that is faster than the rate at which groundwater migrates away. As an unlined surface impoundment, wastewater streams fed to the BAP infiltrate through the CCR deposited in the unit and into the soil below until that water reaches the uppermost aquifer. This can create a localized rise in groundwater elevations, which would cause groundwater to flow away from it in all directions.

There is evidence of groundwater mounding at the BAP. Groundwater elevations measured in borings at the top of and outside of the embankment around the unit indicate that the groundwater elevation within the BAP is higher than the groundwater elevations outside of it. For example, the groundwater elevation measured at the top of the southern embankment (boring BAP-0903) is about 10 feet higher than the groundwater elevation measured outside of it (boring BAP-0904).[33] Similarly, groundwater elevation is approximately 1 foot higher at the top of the western embankment (boring BAP-0901) than outside the western embankment (boring BAP-0902).[34] These data suggest groundwater is flowing away from the BAP, at least to the south and the west. These data are supported by model results found in the April 2020 History of Construction, which suggest that seepage from the impoundment has formed a localized groundwater mound beneath the unit.[35]

CCR groundwater monitoring networks are required to be designed based on site-specific, technical information that must include thorough characterization of groundwater flow

---

[33] History of Construction, April 2020, Attachment E Hydrology and Hydrologic Report, Bottom Ash Pond Investigation, Subsurface Cross Sections; Dwg Plate 3, Section 'B'
[34] History of Construction, April 2020, Attachment E Hydrology and Hydrologic Report, Bottom Ash Pond Investigation, Subsurface Cross Sections; Dwg Plate 3, Section 'A'
[35] History of Construction, Gavin Bottom Ash Pond, April 2020, Appendix D, Gavin Plant Ash Pond Investigation Seepage and Slope Stability Analysis, Plate 10, Section B (BAP-0903 and BAP-0904) and section 5.1 Limit Equilibrium Analyses

direction, including seasonal fluctuations. 40 § C.F.R. 257.91(b)(1). Neither the October 2017 Gavin BAP Groundwater Monitoring System Certification nor the Annual GWMCA Reports discuss evidence of groundwater mounding. Additionally, these reports do not discuss any of the potential impacts of seasonal flow reversals, extraction wells, or groundwater mounding on the design of the groundwater monitoring system, particularly on the placement of background wells. For this reason, EPA is proposing to determine that Gavin has not met the requirements of 40 § C.F.R. 257.91(b)(1) to determine the number, spacing, and depths of groundwater wells based on site-specific technical data.

There are no groundwater elevation data available further west than the three background wells (MW-1, BAC-01, and MW-6), so it is not known how far west groundwater may flow due to the seasonal flow reversals and groundwater mounding. If the groundwater flows far enough to the west to reach the background wells, they could be impacted by contamination from the BAP, but there is not enough data to determine whether these impacts have occurred. However, it appears the groundwater monitoring system is functioning, because SSIs of regulated constituents have been detected in downgradient wells, above levels detected in background wells.

ii. Statistical comparisons

40 C.F.R. § 257.94(c) requires that the number of samples collected and analyzed during each sampling event must include at least one sample from each background and downgradient compliance well. 40 C.F.R. § 257.93(f)(3) requires that, when prediction limit or confidence interval procedures are used, an interval for each constituent must be established from the distribution of background data.

The BAP Annual GWMCA Reports indicate that the distribution of data from all background wells was not used to establish the Upper Prediction Limits (UPLs) used for statistical comparisons. Instead, a UPL was calculated for each background well rather than pooling all background data into one data set. Then, only one background well's UPL—the well with the highest UPL—was used in the statistical comparisons with data from downgradient compliance wells.[36]

The phrase "the distribution of the background data" includes all properly obtained and analyzed samples; nothing in the text of regulation provides for any exclusion. See 40 C.F.R. § 257.93(f)(3). Excluding some of the background data from the statistical analysis because it is lower than other background data artificially elevates background levels of constituents in Appendix III to 40 C.F.R. part 257, potentially masking SSIs in downgradient wells. EPA is proposing to determine that eliminating background data from the distribution because they are low fails to comply requirements in 40 C.F.R. §§ 257.93(f)(3) and 257.94(c).

iii. Alternative source demonstrations are unsupported by data

If a facility determined that there was an SSI over background levels for one or more of the constituents in Appendix III to 40 C.F.R. part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD showing that a source other than the unit was the cause of the SSI. 40 C.F.R. § 257.94(e)(2). If a successful ASD for an SSI is not completed within 90 days, an assessment monitoring program must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSI. In order to rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD requires

[36] Section 3.3.1 of the 2017 Annual GWMCA Report describes this approach, and Section 3.2 of the 2019 Annual GWMCA Report (revised October 2020) confirms this approach was used in 2018 and 2019.

conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

Gavin has detected multiple SSIs during each sampling event for each of the following constituents: boron, pH, sulfate, calcium, chloride, fluoride, and total dissolved solids (TDS).[37] Each time an SSI was detected, an ASD was conducted that concluded the SSI was from a source other than the BAP.

All of the ASDs conducted for the BAP rely on three alternative sources. ASDs for SSIs of pH[38] claim that either a CCR unit located at an adjacent facility owned by Indiana-Kentucky Electric Corporation, the Kyger Creek North Fly Ash Pond (NFAP) or the Ohio River is the source of the SSIs. ASDs for boron[39] claim that the adjacent CCR unit, the NFAP, is the source of the SSIs. ASDs for calcium, chloride, fluoride, sulfate, and TDS claim that the regional bedrock formation is the source of those SSIs. EPA is proposing to determine that the ASDs do not provide sufficient evidence that any of these potential alternative sources is the cause of the SSIs.

Alternative source: Kyger Creek North Fly Ash Pond (pH and boron SSIs)

ASDs for boron and pH claim that contaminated groundwater from the NFAP is impacting the BAP's downgradient wells.[40] In order to show that the NFAP is the source of the contamination, Gavin must establish that groundwater from the NFAP migrates to the BAP's

[37] See the Demonstration, Appendix E, Table 2-1 and Table 3-1
[38] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix A, section 4.1, section 5.1, and Figure 4-1
[39] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix A, section 4.3
[40]Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix A, Figure 4-1, Figure 5-1, Figure 5-2, Figure 4-3, and sections 1 through 8

downgradient wells (i.e., they are hydraulically connected). Gavin makes this claim in the 2019 Annual GWMCA (Revised October 2020), in section 3.3 of Appendix A:

> Based on the presence of the same alluvial aquifer beneath both the Kyger Creek NFAP and the Gavin BAP, and the average north-eastern direction of groundwater flow, it is evident that the Kyger Creek NFAP is hydraulically connected to the downgradient BAP monitoring wells (ERM 2018b).

No groundwater flow data that could demonstrate such a connection are included in the characterization of groundwater flow direction around the BAP (e.g., on the south side of the BAP and around the NFAP).[41]

Further, there is site-specific evidence of groundwater mounding, which indicates there is not a hydraulic connection between the NFAP and the BAP's downgradient wells. The presence of a groundwater mound contradicts Gavin's description of groundwater flow direction as flowing from the NFAP to the BAP because a mound would cause groundwater flow in the opposite direction. As discussed previously, groundwater elevation data measured across the southern embankment[42] indicate that groundwater at the top of the embankment is about 10 feet higher than groundwater on the outer slope of the embankment. This indicates that in the area closest to the NFAP groundwater flows outward from the BAP's southern boundary, that is, away from the BAP and toward the NFAP.

The ASDs present another line of evidence to support the claim that the NFAP is the source of the SSIs, based on a comparison of boron and pH measurements spatially across wells. The ASDs claim that a well that is not part of the groundwater monitoring system, state

[41] See all groundwater flow maps in the Gavin BAP 2017 and 2019 Annual GWMCA Reports
[42] Bottom Ash Pond, Initial Safety Factor Assessment and H&H Analysis, General James Gavin Power Plant, Cheshire Ohio, S&ME Project No. 7217-15-006A, December 2015, Section 'B' (Borings BAP-0903 & BAP-0904) of Bottom Ash Pond Investigation, Subsurface Cross Sections, Dwg. No. Plate 3.

monitoring well B-0904 (located just outside the BAP southern embankment), is where the highest boron concentration (4.2 mg/L)[43] and lowest pH (5.22)[44] were detected. The ASDs claim that this well is upgradient of the BAP and downgradient of the NFAP and therefore has only been impacted by the NFAP. However, the evidence of groundwater mounding indicates this well may actually be downgradient of the BAP and not downgradient of the NFAP. One flow map[45] shows groundwater flowing to the southeast across the unit. Based on the proximity of B-0904 to the BAP and this depicted flow direction, B-0904 may sometimes be downgradient of the BAP.

The 2019 Annual GWMCA Report (revised October 2020) suggests that the Ohio River is the source of the pH SSIs, "…the hydrogeologic data indicate that water from the Ohio River mixes with groundwater from the alluvium underlying the BAP. When these waters mix under the BAP, the result is an intermediate pH (i.e., between the pH of the Ohio River and the pH of the NFAP)." The only constituent in the CCR regulations that can have an SSI based on detection of the constituent below background levels (e.g., below a lower prediction limit) is pH, because pH is measured on a scale of 1 to 14 (and a pH of 7 is neutral). If pH is either too low (acidic) or too high (alkaline), it can be harmful to human health or the environment. The pH SSIs at the BAP were below the lower prediction limit (i.e., they were caused by acidic groundwater with lower pH)[46]. Because the pH of the Ohio River is neutral,[47] the Ohio River cannot be the alternative source of the pH SSIs.

[43] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Figure 4-3
[44] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Figure 4-1
[45] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Figure 3-1: Interpreted Groundwater Potentiometric Contour
[46] The Gavin BAP 2017 Annual GWMCA Report (January 2018) in Table 3 lists the pH LPL as 6.63. According to Table 4-1 of the Gavin BAP Annual GWMCA Report (revised October 2020), the pH of the BAP downgradient wells is between 6.1-6.46.
[47] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Table 4-1

Application of Piper plots

The ASDs present a "Piper plot" in Figure 6-1 of Appendix E to the Demonstration, which Gavin interprets as evidence supporting its determination that the BAP is not responsible for the SSIs and that the NFAP is. Piper plots are a visual representation of the relative proportions of certain chemicals (that is, dissolved ions, or charged particles) in different water samples.[48]

Piper plots are useful to visually represent, for quick comparison, groundwater samples based on chemical type, to examine how natural waters may change over time, and to evaluate whether the physical mixing of different water sources has occurred.[49] A Piper plot consists of three graphs: two triangular graphs, one that plots concentrations of dissolved chemicals in groundwater that are negatively charged (anion) and another that plots concentrations of dissolved chemicals in groundwater that are positively charged (cations). A third diamond-shaped graph combines information from the two triangular plots.

While Piper plots are a widely used visualization technique for groundwater data, their application is limited because they rely on several assumptions. These assumptions may be approximately true for natural waters but are not valid in the context of a potential release from a CCR unit. There is no precedent in literature for applying Piper plots to data at CCR units to show an alternative source is responsible for SSIs, and the ASDs do not provide supporting

[48] Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021

[49] Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021

technical information justifying the approach. EPA is proposing to determine that Gavin's interpretation of the Piper plot is not consistent with these inherent Piper plot assumptions.

One assumption in the application of a Piper plot is that a water sample may be approximately represented by three cation groups (calcium, magnesium, sodium/potassium) and by three anion groups (carbonate/bicarbonate, sulfate and chloride). Other assumptions are that the water sample is in ionic charge equilibrium and that the total mass of dissolved constituents remains unchanged. There is no reason to assume these conditions apply beneath a CCR unit. Released CCR constituents (e.g., boron, fluoride, pH) would result in chemical reactions and would undermine the validity of these assumptions.

Second, the Piper plot analysis in the ASD assumes that only physical mixing occurs in the aquifer beneath CCR units.[50] However, chemical reactions may occur due to releases from CCR units (e.g., precipitation, ion. exchange, sorption). Additionally, groundwater and surface water have different chemical properties (e.g., pH, oxidation-reduction potential, alkalinity), and when they are mixed, chemical reactions (e.g., neutralization, oxidation or reduction) are likely to occur. Differences in chemical composition of groundwater samples identified in Piper plots may be due to chemical reactions rather than physical mixing. The potential for chemical reaction precludes an interpretation of mixing at a CCR unit[51] and undermines the validity of Gavin's Piper plot analysis.

Third, the ASD indicates that the samples presented in Figure 6-1 were collected from 2012 to 2019. It is not clear whether samples compared are from the same sampling event, or if

[50] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Figure 6-1
[51] Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021

samples have been collected from the same sample locations over time. Thus, the observed differences in chemical composition presented in the Piper plot could be due to changes in chemistry over time and space, rather than changes due to mixing.

Additionally, Gavin has selected a unique interpretation of how different water sources beneath the BAP are mixing when several interpretations are possible based on the visual data, because several straight lines can be drawn between different sample locations. A more technical and detailed analysis of the Piper plot is provided in the docket for this proposal.[52]

Alternative source: regional geology (calcium, chloride, fluoride, sulfate, and TDS SSIs)

The 2017 and 2019 Annual GWMCA Reports contain ASDs for SSIs of calcium, chloride, fluoride, sulfate, and TDS. These ASDs claim that the regional bedrock is discharging elevated concentrations of these constituents into the uppermost alluvial aquifer and is the source of the SSIs. The ASDs appear to contend that this discharge occurs at a location directly beneath the BAP, such that only the compliance wells and not the background wells detect elevated concentrations of these constituents.[53]

Regional groundwater data obtained from the United States Geological Survey (USGS) National Water Information System database are cited as evidence of regional background levels of these constituents in groundwater. Groundwater data were selected from monitoring wells screened within the alluvial aquifer and regional bedrock aquifers (the Conemaugh Group and the Monongahela Group).[54] From these, the maximum concentrations of calcium, chloride,

[52] Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021
[53] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Figure 5-1
[54] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix A, Figure 4-2

sulfate, and TDS (regional fluoride data were not cited) within 50 miles of the Gavin Plant were compared to the concentrations of these constituents detected in the BAP's downgradient wells.[55] The ASDs for SSIs detected in 2019 interpret the relative concentrations[56] as follows:

> …regional concentrations of calcium, chloride, sulfate, and TDS are higher than respective groundwater concentrations downgradient of the BAP. Based on these observations, it is likely that the discharge of groundwater from the sedimentary bedrock aquifers to the alluvial aquifer under the BAP (Figure 5-1 and Figure 5-2) is an alternate source for these constituents.

Regional characterization of groundwater from as far as 50 miles away is not sufficient to rebut the site-specific groundwater monitoring data from the compliance wells at the unit's waste boundary indicating that the BAP is the cause of the SSIs. No samples of upgradient on-site bedrock were analyzed, and no other site-specific evidence (e.g., installation and sampling of groundwater wells screened in the bedrock layer) was provided to demonstrate that the bedrock on-site or below the BAP contains elevated levels of the five constituents and is the source of SSIs. Additionally, a hydraulic connection between the bedrock aquifer and the alluvial aquifer is improbable based on the permeability parameters of the geologic layers that the seepage model from the History of Construction utilizes (April 2020).[57]

Additionally, it appears that Gavin may be contending that regional groundwater migrates from a source upgradient of the BAP compliance wells, but downgradient of the background

[55] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, Table 4-2, Figure 2-1, and section 4.2

[56] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix B, section 5.2

[57] Gavin claims that the bedrock aquifer is hydraulically connected to the above alluvial aquifer via the natural fractures in the bedrock (Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix A, section 3.2). However, the existence of a discharge beneath the BAP would be contrary to permeability parameters in the History of Construction Report (History of Construction, Gavin Bottom Ash Pond, April 2020, Appendix D, Gavin Plant Ash Pond Investigation Seepage and Slope Stability Analysis, Plate 10, Section 'B' (BAP-0903 & BAP-0904). According to the seepage model, the alluvial aquifer has a hydraulic conductivity of approximately 1.0E-03 cm/s and the bedrock is assumed to be impermeable (i.e., a hydraulic conductivity less than 1.0E-07 cm/s). Thus, because the alluvial aquifer is much more permeable than the bedrock (more readily allows groundwater flow), it is unlikely that the bedrock aquifer yields enough groundwater to cause the SSIs.

wells. Section 4.2 of Appendix B of the 2019 BAP Annual GWMCA Report (Revised October 2020) states:

> The USGS background data were compared to downgradient BAP data (Wells BAC-02, BAC-03, BAC- 04, and BAC-05) and Ohio River data collected in September 2019. As shown in Table 4-2, the concentrations of calcium, chloride, sulfate, and TDS in groundwater downgradient of the BAP are between the concentrations in USGS background data for groundwater and the Ohio River. These results…demonstrate that calcium, chloride, sulfate, and TDS are present along flow pathways from the sedimentary bedrock aquifers to the alluvial aquifer beneath the BAP.

In essence, Gavin postulates that the regional bedrock is discharging at a location somewhere beneath the BAP.[58] However, no data were provided to substantiate the existence of such a source. Nor was any clear explanation provided regarding why regional groundwater would only impact monitoring results in the downgradient compliance wells and not the background wells.

Thus, EPA is proposing to conclude that the ASDs have not demonstrated that a discharge from the bedrock aquifer is an alternative source of the SSIs detected for calcium, chloride, fluoride, sulfate, and TDS.

Evidence indicating that the BAP is the source of all SSIs There is significant evidence that the BAP is the source of the SSIs, which is not discussed or explained in any of the ASDs. First, the BAP unit is unlined[59] allowing water to infiltrate through ash into the groundwater. Second, the BAP unit typically operates with approximately 25 vertical feet of water contained in the impoundment.[60] These 25 feet of water create significant pressure (i.e., hydraulic head) on the foundation soil of the BAP and result in the downward movement of water. The water comes

[58] Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Appendix A, Figure 5-1 and Figure 5-2
[59] Liner Design Certification (Bottom Ash Pond), October 2016
[60] 2019 Annual GWMCA report (Revised October 2020), Figures 5-1 and 5-2

in contact with coal ash and can percolate down through the underlying soil layer into the uppermost alluvial aquifer.[61] Third, Gavin's seepage model found that water contained in the BAP is migrating downward towards the uppermost aquifer[62]:

> "Prior to performing the limit equilibrium stability analyses, seepage analyses were performed to develop a better understanding of the likely *phreatic surface within the embankment and foundation.* The models were calibrated by adding additional total head boundary conditions within the subsurface to best model the groundwater table as observed in the observation wells. *The model results, in conjunction with the observation well readings, suggest that much of the seepage emanating from the ponds is moving downward into the more permeable alluvium soils rather than moving laterally through the less permeable embankments*."

(Emphasis added). Water seeping downward from the BAP into the soils below indicates that the BAP is contributing to the SSIs.[63]

Finally, the BAP unit is depicted in Figures 5-1 and 5-2 of the 2019 Annual GWMCA report as having its base 10 to 15 feet deep into the underlying layer of silty clay. Below the approximately 10-foot-thick silty clay layer is a layer of silty clay interbedded with sand that is about 17 feet thick. The BAP sits upon this 17-foot-thick layer of silty clay interbedded with sand. A layer of this composition is not impermeable. In fact, according to the figure depicted on Plate 10 Seepage and Slope Stability Analysis from Gavin's History of Construction, the

---

[61] By comparison, the Kyger Creek NFAP has not contained water since it was dewatered in 1997 and capped and closed. Therefore, there is minimal water pressure from above the ash that could force water to percolate through the ash and could leach CCR contamination into groundwater, (Gavin BAP 2019 Annual GWMCA Report, revised October 2020, Section 7.3 of the ASDs), (History of Construction, South Fly Ash Pond, American Electric Power Service Corporation, October 2016, section 8.0).
[62] See the Demonstration, Appendix H, Bottom Ash Pond Initial Safety Factor Assessment and H&H Analysis, Section 5.1
[63] The downward seepage of water impounded in the BAP is also supported by the following cross-section: History of Construction, April 2020, Appendix D, Gavin Plant Ash Pond Investigation Seepage and Slope Stability Analysis, Plate 10, Section 'B' (BAP-0903 & BAP-0904)

hydraulic conductivity of this layer is on the order of 1.0E-05 centimeters per second.[64] This is all evidence that the BAP is the source of the SSIs.

Because of the lack of site-specific evidence and inconclusive analyses provided in the ASDs, and the site-specific evidence that indicate the SSIs come from the BAP, EPA is proposing to determine that the ASDs for all SSIs do not meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

(b) <u>Groundwater Monitoring Compliance at the FAR and RWL</u>

EPA evaluated the Demonstration as well as the 2017 through 2019 Annual GWMCA Reports for the FAR and RWL. EPA is proposing to determine that the groundwater monitoring systems are inadequate for multiple reasons and that analyses of groundwater data do not comply with the CCR regulations. First, design of the groundwater monitoring system is not adequately supported by thorough characterization of groundwater flow direction, required in 40 C.F.R. § 257.91(b)(1). Second, there is an insufficient number of monitoring wells along the downgradient waste boundary to monitor all potential contaminant pathways in accordance with 40 C.F.R. § 257.91(a)(2). Third, statistical comparisons between background and compliance well data have been conducted in a manner that does not meet requirements in 40 C.F.R. §§ 257.93(a), 257.93(f)(3), or 257.94(c). Additionally, it appears that statistical comparisons have not been conducted for data from two of the downgradient compliance wells monitoring the RWL, as required by 40 C.F.R. § 257.93(h). Finally, ASDs in the 2018 and 2019 Annual GWMCA Reports fail to meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

[64] By contrast, the bottom of the NFAP is shown as constructed above a more confining silty/clay layer. Further, the base of the BAP unit is about 8 feet lower than Kyger Creek's NFAP. This means that a potential release of CCR constituents from the BAP would have less vertical distance to travel before meeting the uppermost aquifer than from the NFAP.

The CCR regulations require a groundwater monitoring system to yield samples from the uppermost aquifer. 40 C.F.R. § 257.91(a). It appears that the FAR and RWL groundwater monitoring systems include wells installed in multiple geologic formations, because at different locations and times the uppermost aquifer is present at this site in those various geologic formations. The alluvial formation does not appear to be present anywhere other than to the east of both units and at the southeastern boundary of the RWL, but at those locations it is the uppermost aquifer. Where the alluvial formation is not present, the Morgantown formation is the uppermost aquifer; however, wells screened in the Morgantown formation do not yield sufficient groundwater to sample during every sampling event. Where neither the alluvial formation nor the Morgantown formation is present, or where neither yields sufficient water for sampling, the Cow Run formation is the uppermost aquifer.

Monitoring well locations, groundwater potentiometric contours, and flow direction are depicted in the Demonstration[65] for both the Morgantown formation and in the Cow Run formation. The Demonstration depicts the FAR groundwater monitoring network as consisting of 13 upgradient wells and 5 downgradient wells screened in two geologic formations, the Morgantown formation and the Cow Run formation[66]:

<u>Morgantown Sandstone Aquifer</u>

Upgradient wells: 2016-03, 2016-05, 2016-11, 96148, 96152, 96153R, 96154R

Downgradient wells: 2016-01, 2016-07, 9910

<u>Cow Run Sandstone Aquifer</u>

Upgradient wells: 2016-04, 2016-06, 2016-09, 2016-10, 96147, MW-20

Downgradient wells: 2016-02, 2016-08

---

[65] Demonstration, Appendix I, Morgantown Sandstone Potentiometric Surface Map March 2019

[66] Demonstration, Appendix K, Tables 2-3 and 2-4

The Demonstration depicts that during 2019, the RWL network consisted of 10 upgradient wells and 6 downgradient wells screened in three geologic formations: the Morgantown formation, the Cow Run formation, and the alluvial formation[67]:

<u>Alluvial Aquifer</u>

Downgradient wells: 94137, 9802

<u>Morgantown Sandstone Aquifer</u>

Upgradient wells: 2000, 2003, 9806, 94125, 94128, 94139

Downgradient wells: 93108, 2016-21

<u>Cow Run Sandstone Aquifer</u>

Upgradient wells: 2002, 9801, 93100, 94126

Downgradient wells: 94136, 2016-20

(i) Groundwater Monitoring Network Design Unsupported by Data

40 C.F.R. § 257.91(b) requires that the number, spacing, and depth of monitoring wells be determined based upon site-specific technical information that includes thorough characterization of groundwater flow and other aquifer properties. EPA is proposing to determine that the number, spacing, and locations of wells at both the FAR and the RWL are unsupported by site-specific technical data. The groundwater contours depicted in maps provided in the Demonstration are unsupported by a sufficient number of groundwater elevation measurements. This makes it difficult to assess the adequacy of the monitoring networks as a whole. EPA is proposing to determine that Gavin failed to comply with 40 C.F.R. § 257.91(b) and failed to demonstrate compliance with 40 C.F.R. § 257.91(a).

[67] Demonstration, Appendix Q, Tables 2-3 and 2-4

The FAR is located northwest of the RWL; these units share an approximately 2,000-foot unit boundary, which is the southeast boundary of the FAR and the northwest boundary of the RWL. Each unit is monitored by a distinct groundwater monitoring system.

Maps in the Demonstration[68] depict a groundwater divide on the eastern sides of the FAR and RWL. A groundwater divide functions as a geologic divide that separates groundwater. Groundwater flows on either side of the divide are independent (e.g., could flow in different directions). As a consequence, independent data sets are required from each side of the divide to accurately characterize groundwater flow conditions (e.g., flow direction and rate). In this case, groundwater flow is depicted both to the west and to the east (i.e., inward toward the units to the west and outward away from the units to the east) at the groundwater divide. However, all of the groundwater elevation data points lie along the divide itself; there are no groundwater elevation measurements to the west or the east of the depicted divide.[69] While some wells are depicted to the east, they are highlighted to indicate they were not gauged (i.e., a groundwater elevation measurement was not taken.) Therefore, the existence of this groundwater divide and this characterization of groundwater flow direction are unsupported by sufficient groundwater elevation measurements. If the groundwater divide is not located as depicted or does not exist, there could be an unmonitored downgradient boundary on the east side of the FAR or the RWL. Without supporting data to confirm this characterization, EPA cannot fully assess compliance with 40 C.F.R. § 257.91(a)(2) in areas where the groundwater divide is depicted. EPA is proposing to determine that failure to have data to support the design of the groundwater monitoring networks is a failure to demonstrate compliance with 40 C.F.R. § 257.91(b).

---

[68] Demonstration, Appendix O
[69] Demonstration, Appendix O, March 2019 Morgantown and Cow Run potentiometric surface maps

If the depicted contours are correct, then based on these contours certain wells Gavin designated as upgradient appear to be downgradient of the CCR units, and vice versa. Figures in Appendix I to the Demonstration depict groundwater flow and the groundwater monitoring wells at the FAR. Two Morgantown wells identified as downgradient wells (2016-01 and 2016-07) appear to be located upgradient of the unit, and the two Cow Run formation wells identified as downgradient wells (2016-02 and 2016-08) appear to be located upgradient of the unit. Figures in Appendix O to the Demonstration depict groundwater flow and the groundwater monitoring wells at the RWL. A Morgantown well identified as a downgradient well (94139) appears to be located upgradient of the unit. These elevation data are not discussed, and it is not explained how it was determined that these wells are upgradient of the units in the documents reviewed by EPA. EPA is proposing to determine that failure to provide data to support the location and spacing of these wells is a failure to comply with 40 C.F.R. § 257.91(b).

(ii) Insufficient Number of Monitoring Wells

40 C.F.R. § 257.91(a)(2) requires installation of a groundwater monitoring system that accurately represents the quality of groundwater passing the waste boundary of each unit and to adequately monitor all potential downgradient contaminant pathways. 40 C.F.R. § 257.91(c) requires a sufficient number of wells to meet the requirements of 40 C.F.R. § 257.91(a), including a minimum of one upgradient and three downgradient wells. 40 C.F.R. § 257.91(c)(1).

EPA is proposing to determine that the groundwater monitoring systems at the FAR and the RWL have an insufficient number of downgradient monitoring wells to meet these requirements. Data from each of the three geologic formations have been analyzed separately, with separately established background levels.[70] Therefore, the number and spacing of wells at

[70] Gavin FAR 2018 Annual GWMCA Report, January 2019, Appendix B, Table 2; Gavin RWL 2018 Annual GWMCA Report, January 2019, Appendix B, Table 2

the downgradient waste boundary must be sufficient to monitor all potential contaminant pathways in each formation. Due to the large size and hydrogeologic complexity of both the FAR and the RWL, there is a need for additional wells to characterize groundwater quality and flow conditions.[71]

Groundwater flow within the FAR is generally depicted as being towards the southeast. Therefore, the southeastern waste boundary of the FAR is a downgradient waste boundary. There are no monitoring wells installed on the southeastern border on the FAR, which appears to be more than 2,000 feet in length. EPA is proposing to determine this does not comply with the requirement in 40 C.F.R. § 257.91(a)(2) that the groundwater monitoring system must represent the quality of groundwater passing the downgradient waste boundary, and to monitor all potential contaminant pathways.

Groundwater flow within the RWL is generally depicted as being towards the southeast. Therefore, the southeastern waste boundary of the RWL is a downgradient waste boundary. Two downgradient wells are installed in the Morgantown formation (93108 and 2016-21), two are installed in the Cow Run formation (94136 and 2016-20), and two alluvial downgradient wells (9802, 94137) are installed. Additionally, certain monitoring wells (e.g., Cow Run well 2016-20) have been consistently running dry during semi-annual sampling events. In 2019, only four downgradient compliance wells yielded semi-annual downgradient groundwater samples,[72] and they were screened in different geologic formations.

The monitoring system at the FAR does not have three downgradient wells installed in the Cow Run formation, and the groundwater system at the RWL does not have three

---

[71] 80 FR 21400 (April 17, 2015)

[72] Morgantown well 2016-21, Cow Run well 94136, and Alluvium wells 94137 and 9802 yielded semi-annual samples in 2019

downgradient wells installed in any geologic formation. EPA is proposing to determine that both systems fail to meet the requirement in 40 C.F.R. § 257.91(c) to have a minimum of one upgradient and three downgradient wells.

(iii) Statistical comparisons

40 C.F.R. § 257.94(c) requires that the number of samples collected and analyzed during each sampling event must include at least one sample from each background and downgradient compliance well. 40 C.F.R. § 257.93(f)(3) requires that, when prediction limit or confidence interval procedures are used, an interval for each constituent must be established from the distribution of background data.

The 2018 and 2019 FAR and RWL Annual GWMCA Reports[73] indicate that the distribution of all data from the background wells (i.e., "the distribution of background data") was not used to establish the UPLs used for statistical comparisons. Rather than pooling all background data into one data set, a UPL was calculated for each background well. Then, only one background well's UPL—the well with the highest UPL—was used in the statistical comparisons with data from downgradient compliance wells.

The phrase "the distribution of background data" includes all properly obtained and analyzed samples from background wells; nothing in the text of the regulation provides for any exclusion. Excluding some of the background data from the statistical analysis because it is lower than other background data artificially elevates background levels of constituents in Appendix III to 40 C.F.R. part 257, potentially masking SSIs in downgradient wells. EPA is

[73] 2018 and 2019 FAR and RWL Annual GWMCA Reports, Section 3.2.

proposing to determine that eliminating background data from the distribution because they are low fails to comply with the requirements in 40 C.F.R. §§ 257.93(f)(3) and 257.94(c).

Additionally, there is no mention in the RWL Annual GWMCA Reports of whether or how statistical analyses were conducted for data from the two alluvium compliance wells, 9802 and 94132. It appears that statistical comparisons may not have been conducted for data from these compliance wells, as required by 40 C.F.R. § 257.93(h).[74]

(iv) Alternative Source Demonstrations (ASDs)

As discussed above, if a facility determined that there was an SSI over background levels for one or more of the constituents in Appendix III to 40 C.F.R. part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD showing that a source other than the unit was the cause of the SSI. 40 C.F.R. § 257.94(e)(2). If a successful ASD for an SSI is not completed within 90 days, an assessment monitoring program must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSI. In order to rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD requires conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

Multiple SSIs have been detected in various wells and sampling events at both the FAR and the RWL. Each time an SSI was detected, an ASD was conducted that concluded the SSI was from a source other than the FAR or RWL. EPA is proposing to determine that the ASDs do not provide sufficient evidence that one or more alternative sources exists and is the cause of the SSIs in accordance with 40 C.F.R. § 257.95(g)(3)(ii).

[74] That provision requires the facility to determine whether there has been a statistically significant increase (SSI) over background values for each constituent of concern under either § 257.94(a) or § 257.95(a)

(A) ASDs for the FAR

ASDs have been conducted at the FAR for SSIs of multiple constituents. Table 6 of the 2017 Annual GWMCA Report reports SSIs of boron in four wells, SSIs of chloride are reported in two wells, SSIs of fluoride are reported in three wells, and two wells detected SSIs of TDS. However, during the following year Gavin reinterpreted groundwater flow and changed the status of four monitoring wells from downgradient to upgradient. This resulted in changes to the calculated UPLs, and consequently eliminated some of the SSIs documented in the 2017 Annual GWMCA Report. EPA has noted concerns above regarding the characterization of groundwater flow conditions, including the depicted groundwater divide, and the classification of certain wells as upgradient or downgradient. Once groundwater flow conditions are characterized and supported by sufficient data, it could be determined that the SSIs in the 2017 Annual GWMCA Report are representative of conditions at the unit. If that is the case, assessment monitoring would be required.

After these reinterpretations, some SSIs were detected. In Morgantown well 2016-01, SSIs were detected for fluoride in July 2017, March 2018, and September 2018,[75] and SSIs for pH were detected at all sampling events in 2018 and 2019.[76] In Cow Run well 2016-02 at the FAR, SSIs were detected for calcium and chloride in September 2018,[77] and a calcium SSI was again detected in September 2019. SSIs for TDS were also detected at the FAR in 2019.

The ASDs identify potential alternative sources of fluoride SSIs, including agricultural runoff, discharges from septic systems, drilling of oil and gas wells, and the use of brine on

[75] Gavin FAR 2019 Annual GWMCA Report, January 2020, Table 2-1
[76] Gavin FAR 2020 Annual GWMCA Report, January 2021, Table 2-1
[77] Gavin FAR 2019 Annual GWMCA Report, January 2020, Table 2-2

roadways.[78] Similarly, ASDs identify potential alternative sources of calcium and chloride SSIs,[79] such as naturally occurring brine or road deicing practices. However, these discussions are merely hypothetical and speculative. No evidence is provided that any of these sources exist, are hydraulically connected to the FAR downgradient compliance wells, or are the cause of the SSIs. The identification of potential alternative sources is not evidence that an alternate source exists and is the cause of the SSIs for calcium, fluoride, or TDS. Therefore, EPA is proposing to determine that these ASDs do not meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

ASD for pH

The 2018 and 2019 ASDs claim that poor construction of monitoring well 2016-01 is the source of the pH SSIs detected at this well. Specifically, the ASDs claim elevated pH was caused by cement used to construct the well and contact between the screened interval and the cement bentonite grout. No evidence was provided to substantiate this claim and monitoring well 2016-01 remains a part of the groundwater monitoring system at the FAR.

If poor well construction resulted in groundwater samples that fail to accurately characterize groundwater quality at the downgradient waste boundary of the FAR as required by 40 C.F.R. § 257.91(a)(2), then the groundwater monitoring system would need to be modified to replace the well. However, given the lack of supporting evidence for this claim and the fact that monitoring well 2016-01 has consistently detected SSIs for pH and has not been replaced, EPA is proposing to determine that these ASDs do not meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

---

[78] 2018 Annual GWMCA Report, January 2019, Appendix B, section 3.1

[79] 2018 Annual GWMCA Report, January 2019, Appendix B, section 3.2

Application of Piper plots at the FAR

The ASD presents "Piper plots" in Figure 7-1, Figure 7-2, and Figure 5-2 of Appendix K of the Demonstration, which Gavin interprets as evidence supporting its determination that the FAR is not responsible for the SSIs and that an alternate source is. Piper plots are a visual representation of the relative proportions of certain chemicals (that is, dissolved ions, or charged particles) in different water samples.[80]

As discussed previously, while Piper plots are a widely used visualization technique for groundwater data, their application relies on several assumptions. These assumptions may be approximately true for natural waters but not valid in the context of a potential release from a CCR unit. EPA is proposing to determine that Gavin's interpretation of the Piper plot is not consistent with these inherent Piper plot assumptions.

Concerns discussed previously with the application of Piper plots at the BAP are also true for the application of Piper plots at the FAR. These include that the presence of CCR constituents at elevated levels would undermine the validity of assumptions about ionic charge equilibrium and representation of a water sample by three cation groups (calcium, magnesium, sodium/potassium) and by three anion groups (carbonate/bicarbonate, sulfate and chloride); and that only physical mixing, without chemical reactions, occurs in the aquifer beneath CCR units.[81] Additionally, the use of Piper plots to negate data indicating a possible release (i.e., an SSI), when the application of a Piper plot requires the assumption that no release has occurred, does

[80] Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021
[81] Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021

not appear to be a scientifically supportable approach for an ASD. For these reasons, EPA is proposing to determine the Piper plots are not a sufficient line of evidence to support an ASD for the FAR.

(B) ASDs for the RWL

At the RWL, multiple SSIs have been detected. In the 2017 Annual GWMCA Report, SSIs of calcium and fluoride were initially detected in Morgantown wells and SSIs of pH and sulfates were detected in Morgantown and Cow Run wells.[82] However, during the following year Gavin reinterpreted groundwater flow and changed the status of seven monitoring wells from downgradient to upgradient. This resulted in changes to the calculated UPLs, and consequently eliminated some of the SSIs documented in the 2017 Annual GWMCA Report. See discussion above under "ASDs for the FAR." It could be determined that the SSIs in the 2017 Annual GWMCA Report are presentative of conditions at the unit. If that is the case, assessment monitoring would be required.

After these reinterpretations, some SSIs were detected. At the RWL Morgantown well 2016-21, multiple pH SSIs have been detected. In Morgantown well 93108, a fluoride SSI was detected in the May 2017 sampling event. The ASDs for these SSIs are very similar to the ASDs for SSIs detected at the FAR: they rely on regional background data to demonstrate regional geology or naturally occurring brine caused the fluoride SSIs.

The ASDs identified regional geology, regional brine, and/or anthropogenic sources (e.g., agricultural runoff, drilling of oil and gas wells) as potentially responsible for calcium, fluoride, and TDS SSIs in compliance well 93108 at the RWL.[83] However, these discussions are merely

---

[82] Gavin RWL 2017 Annual GWMCA, January 2018, Table 5
[83] Gavin RWL 2018 Annual GWMCA, January 2019, Appendix A, sections 3.1 and 3.2

speculative. The ASDs did not clearly identify a particular source as the cause. No evidence is provided to show that any of these sources exist, are hydraulically connected to the RWL downgradient compliance wells, or are the cause of the SSIs. Therefore, EPA is proposing to determine that these ASDs do not meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

ASDs for pH

The 2018 and 2019 ASDs claim that poor well construction is the source of the pH SSIs at the RWL, similar to the ASDs for SSIs at the FAR. Also similar to the FAR, this claim is speculative at the RWL—no evidence has been provided to support it—and monitoring well 2016-21 remains a part of the groundwater monitoring system at the RWL. If poor well construction resulted in groundwater samples that fail to characterize groundwater quality at the downgradient waste boundary of the RWL as required by 40 C.F.R. § 257.91(a)(2), then the groundwater monitoring system would need to be modified to remove the well. However, given the lack of supporting evidence for this claim and the fact that monitoring well 2016-21 remains in use and has consistently detected SSIs for pH, EPA believes there is not sufficient evidence that this is the cause of the SSIs. Therefore, EPA is proposing to determine that these ASDs do not meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

Application of Piper plots- RWL

The ASD presents a "Piper plot" Figure 7-1 of Appendix Q to the Demonstration, which Gavin interprets as evidence supporting its determination that the RWL is not responsible for the SSIs and that an alternate source is. Piper plots are a visual representation of the relative

proportions of certain chemicals (that is, dissolved ions, or charged particles) in different water samples.[84]

As discussed previously, while Piper plots are a widely used visualization technique for groundwater data, their application relies on several assumptions. These assumptions may be approximately true for natural waters but not valid in the context of a potential release from a CCR unit. EPA is proposing to determine that Gavin's interpretation of the Piper plot is not consistent with these inherent Piper plot assumptions.

Concerns discussed previously with the application of Piper plots at the BAP are also true for the application of Piper plots at the RWL. These include that the presence of CCR constituents at elevated levels would undermine the validity of assumptions about ionic charge equilibrium and representation of a water sample by three cation groups (calcium, magnesium, sodium/potassium) and by three anion groups (carbonate/bicarbonate, sulfate and chloride); and that only physical mixing, without chemical reactions, occurs in the aquifer beneath CCR units.[85] Additionally, the use of Piper plots to negate data indicating a possible release (i.e., an SSI), when the application of a Piper plot requires the assumption that no release has occurred, does not appear to be a scientifically supportable approach for an ASD. For these reasons, EPA is proposing to determine the Piper plots are not a sufficient line of evidence to support an ASD for the RWL.

(c) Certification of groundwater monitoring network

---

[84]Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021

[85]Memorandum titled, "Review of Piper Plots for the Bottom Ash Pond, Fly Ash Reservoir, and Residual Waste Landfill Coal Combustion Residual Units at the General James M. Gavin Generating Station, Cheshire, Ohio" from RTI to EPA, dated October 28, 2021

40 C.F.R. § 257.91(f) requires that the owner or operator obtain a certification from a professional engineer (or equivalent) stating that the groundwater monitoring system has been designed and constructed to meet the requirements of the CCR Rule. If substantive changes to a groundwater monitoring system are made after an initial certification is obtained, the certification must be updated to reflect these changes. Some examples of changes that could affect the continued validity of the P.E. certification include decommissioning a well or re-designating a background well as a compliance well.

The FAR and RWL groundwater monitoring system P.E. Certifications are both dated July 26, 2016, and the versions posted to the CCR compliance website appear to be incomplete (each one is a one-page document that begins with item number 4). Since obtaining each certification for the FAR and the RWL, changes have been made that could affect the compliance status of the networks.

At the FAR in 2017, the groundwater monitoring network included 5 upgradient and 11 downgradient wells. In 2018, it included 12 upgradient and 5 downgradient wells. These changes have been made since the FAR groundwater monitoring network was originally certified in 2017, but the P.E. Certification has not been updated.

At the RWL in 2019, monitoring well 94136 was a downgradient compliance well in 2020, monitoring well 94136 was a background well. These changes have been made since the RWL groundwater monitoring network was originally certified in 2017, but the P.E. Certification has not been updated.

EPA is proposing to determine that Gavin has not met the requirements of 40 C.F.R. § 257.91(f) to obtain a certification that the current groundwater monitoring systems at the FAR and RWL have been designed and constructed to meet the requirements of 40 C.F.R. § 257.91.

(d) Completeness of Reports and Clarity of Visual Representation of Data

While the Demonstration was determined to be complete, EPA's review was made more difficult by the fact that the Annual GWMCA Reports for all units failed to include monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98, as required by 40 C.F.R. § 257.90(e)(3). No laboratory analytical reports or information about statistical analyses were included.[86] As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3).

The purpose of the Annual GWMCA Report is to provide the most recently obtained groundwater and corrective action information as well as allow review for compliance with the requirements. The groundwater monitoring provisions in 40 C.F.R. §§ 257.90 through 257.95 include numerous requirements (e.g., standards for lowest achievable quantitation limits, requirement to analyze samples for total recoverable metals, performance standards for various statistical methods). It is the owner or operator's responsibility to demonstrate that they are in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents the EPA, states, or other stakeholders the ability to evaluate compliance.

IV. Proposed Date to Cease Receipt of Waste

EPA is proposing that Gavin must cease receipt of waste within 135 days of the date of the Agency's final decision (i.e., the date on which the decision is signed). EPA is further proposing that, under certain circumstances described below, EPA could authorize additional time for Gavin to continue to use the impoundments to the extent necessary to address

[86] This information is provided in a limited scope in the Alternative Source Demonstration (see Annual GWMCA Report, January 31, 2019, Appendix C).

demonstrated grid reliability issues, if any, provided that Gavin submits a planned outage request to PJM within 15 days of the date of EPA's final decision and Gavin provides the PJM determination disapproving the planned outage and the formal reliability assessment upon which it is based to EPA within 10 days of receiving them.

The regulations state that, when EPA denies an application for an extension, the final decision will include the facility's deadline to cease receipt of waste, but they do not provide direction on what the new deadline should be. 40 C.F.R. § 257.103(f)(3). EPA is proposing to set a new deadline for Gavin to cease receipt of waste that would be 135 days from the date of the final decision on Gavin's Demonstration. This would provide Gavin with the same amount of time that would have been available to the facility had EPA issued a denial immediately upon receipt of the Demonstration (i.e., from November 30, 2020, when EPA received the submission, to April 11, 2021, the regulatory deadline to cease receipt of waste). This amount of time thus puts the facility in the same place it would have been had EPA immediately acted on the Demonstration and therefore adequately accounts for any equitable reliance interest Gavin may have had after submitting its Demonstration. Moreover, as discussed further below, this date should provide Gavin with adequate time to coordinate with and obtain any necessary approvals from PJM for any outage of the coal-fired boiler that may be necessary. This proposed deadline for Gavin to cease receipt of waste is the same as the proposed effective date of EPA's final decision (*see* Section VI below).

Given that this proposed deadline (135 days from the date of EPA's final decision) is sooner than the deadline requested by Gavin, EPA understands that it is likely that the coal-fired boiler associated with the CCR unit will temporarily need to stop producing waste (and therefore power) until either construction of the AHE dry handling system and the PWP is completed and

commercially operational or some other arrangements are made to manage its CCR and/or non-CCR wastestreams. *See* discussion of adverse effects above in Section III.B. In Gavin's Demonstration it noted that if the requested deadline were not granted, it would have to cease power production, which would reduce generation capacity in the state and reduce reliability of the electric grid. Gavin provided no information or evidence to support this statement. EPA does not have independent evidence showing that the temporary outage of the coal-fired boiler at this facility would affect the reliability of the grid.

This facility operates as part of the PJM system, which is the largest competitive market for electric power in the United States. PJM is an RTO that is part of the Eastern Interconnection grid. PJM currently has a significant amount of excess generating capacity, and consequently, a relatively large reserve margin. A reserve margin is a measure of the system's generating capability above the amount required to meet the system's peak load.[87] PJM's target reserve margin[88] for the region is now 14.7%.[89] PJM's actual reserve margin in 2018 was more than twice that, at 32.8%; in 2019 it was 29%. The anticipated reserve margin for 2021 is projected to be almost 34%.

The significant exceedance of PJM's existing target reserve margin, combined with scheduled new capacity coming online into the market, suggests that the temporary outage at the Gavin Power Plant would not adversely affect resource adequacy requirements. EPA also has not

[87] Reserve margin is defined as the difference between total dependable capacity and annual system peak load (net internal demand) divided by annual system peak load.
[88] The target reserve margin, also known as the Installed Reserve Margin, is "the percent of aggregate generating unit capability above the forecasted peak load that is required for adherence to meet a given adequacy level." Page 52, https://www.pjm.com/-/media/committees-groups/committees/mc/2020/20201119/20201119-cac-2-2020-installed-reserve-margin-study-results-report.ashx.
[89] North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 44 (where "Reference" Reserve Margin Level refers to PJM's Installed Reserve Margin), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.

seen any information to indicate that an extended planned outage at the Gavin Power Plant would trigger local reliability violations.[90] Additionally, especially with the advance notice, there are a wide array of tools available to utilities, system operators, and state and federal regulators to address situations where the outage of a generating unit might otherwise affect local electric reliability conditions.

Nonetheless, EPA is sensitive to the importance of maintaining enough electricity generating capacity to meet the region's energy needs, including meeting specific, localized issues. EPA understands that it is possible that in some instances temporarily taking generating units (including coal-fired units) offline could have an adverse, localized impact on electric reliability (e.g., voltage support, local resource adequacy), although Gavin has presented no evidence that such is the case with this facility.

If a generating asset were needed for local reliability requirements, the grid operator (e.g., PJM) might not approve a request for a planned outage. In such instances, the owners/operators of the generating unit could find themselves in the position of either operating in noncompliance with RCRA or halting operations and thereby potentially causing adverse reliability conditions.

EPA is obligated to ensure compliance with RCRA to protect human health and the environment. Where there is a conflict between timely compliance and electric reliability, EPA intends to carefully exercise its authorities to ensure compliance with RCRA while taking into account any genuine, demonstrated risks to grid reliability identified through the process established by PJM that governs owner/operator requests for planned outages and/or

[90] A local reliability violation might occur, for example, if transmission line constraints limit the amount of power that can get to an area from plants outside that area.

deactivation.[91] Accordingly, EPA is proposing to rely on established processes and authorities used by PJM to determine whether a planned outage necessary to meet the new deadline would cause a demonstrated grid reliability issue.

PJM is responsible for coordinating and approving requests for planned outages of generation and transmission facilities, as necessary, for the reliable operation of the PJM RTO.[92] In PJM, power plants are to submit a request at least 30 days in advance of a planned outage to allow PJM to evaluate whether the resource is needed to maintain grid reliability. PJM will grant the request unless it determines that the planned outage would adversely affect reliability.

If PJM approves a planned outage request, the outage may proceed and there would be no reason to expect that the outage would affect reliability. However, if PJM disapproves a planned outage, the procedure is for the PJM member to submit a new planned outage request for PJM to evaluate (with potential proposals to mitigate previously indicated reliability violations with the prior request). This process is repeated until the generating facility submits an acceptable request. The PJM member may also request PJM's assistance in scheduling a planned outage.

PJM may rely on different bases in determining whether to deny a request for a planned outage. For example, a denial may be issued because of timing considerations taking into account previously approved planned outage requests, in which case the EPA would expect the plant owner to work with PJM to plan an outage schedule that can be approved by PJM and also satisfies the plant owner's RCRA obligations, without regard to any cost implications (e.g., in

---

[91] *See, e.g.*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at https://www.pjm.com/~/media/documents/manuals/m10.ashx.
[92] *See*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at https://www.pjm.com/~/media/documents/manuals/m10.ashx.

meeting any contractual obligations with third parties) that may result for the plant owner under a revised proposed outage schedule.

Alternatively, however, in some cases, PJM might deny a request should it determine that the planned outage could not occur without triggering operational reliability violations. In such cases, the system operator might determine that the generating unit would need to remain in operation until remedies are implemented. As set forth above, Gavin has presented no evidence that such is the case with this facility.

For the Gavin Power Plant, EPA is proposing to rely on PJM's procedures for reviewing planned maintenance outage and similar requests. Accordingly, EPA is proposing that, if PJM approves Gavin's planned outage request, EPA would not grant any further extension of the deadline to cease receipt of waste (i.e., the deadline would be 135 days from the date of EPA's final decision). If, however, PJM disapproves Gavin's planned outage request based on a technical demonstration of operational reliability issues, EPA is proposing that, based on its review of that disapproval and its bases, EPA could grant a further extension (i.e., beyond 135 days from the date of EPA's final decision). EPA is further proposing that such a request could only be granted if it were supported by the results of the formal reliability assessment(s) conducted by PJM that established that the temporary outage of the boiler during the period needed to complete construction of alternative disposal capacity would have an adverse impact on reliability. In such a case EPA is proposing that, without additional notice and comment, it could authorize continued use of the impoundment for either the amount of time provided in an alternative schedule proposed by PJM or the amount of time EPA determines is needed to complete construction of alternative disposal capacity based on its review of the Demonstration, whichever is shorter. EPA is further proposing that a disapproval from PJM without a finding of

technical infeasibility for demonstrated reliability concerns would not support EPA's approval of an extension of the date to cease receipt of waste because any concern about outage schedules and their implications for plant economics could be resolved without an extension of RCRA compliance deadlines (e.g., through provision of replacement power and/or capacity; rearranging plant maintenance schedules; reconfiguration of equipment).

To obtain an extension, EPA is proposing that Gavin must submit a request for an outage to PJM within 15 days of the date of EPA's final decision. To avoid the need for serial requests and submissions to PJM, EPA is proposing to require Gavin to contact PJM and request assistance in scheduling the planned outage so that Gavin and PJM can determine the shortest period of time during an overall planned outage period in which the generating unit must be online to avoid a reliability violation. EPA expects that Gavin and PJM would plan the outage(s) and return-to-service periods—and any other needed accommodations—in ways that minimize the period of actual plant operations.

Finally, to obtain an extension from EPA, Gavin must submit a copy of the request to PJM and the PJM determination (including the formal reliability assessment) to EPA within 10 days of receiving the response from PJM. EPA would review the request and, without further notice and comment, issue a decision.

One hundred thirty-five days should normally provide adequate time to obtain a decision from PJM. According to the PJM Manual 10 (at page 17), the normal process for obtaining approval for a planned outage is 30 days. The 135 days should also provide sufficient time to accommodate multiple requests, if necessary, to obtain approval. However, EPA solicits comment on whether 135 days from the date of the final decision provides sufficient time to accommodate the normal process of obtaining approval for a planned outage.

V. Conclusion

In conclusion, EPA is proposing to deny Gavin's request for an alternative compliance date for its BAP CCR surface impoundment, located at the General James M. Gavin Plant in Cheshire, Ohio. EPA is proposing to deny Gavin's request for an alternative compliance deadline for the BAP because Gavin failed to demonstrate that 1) there is no alternative capacity for its non-CCR wastestreams and 2) that the requested time frame is the fastest technically feasible amount of time in which to complete the measures necessary to obtain alternative capacity. EPA is also proposing to deny the extension request because Gavin has not demonstrated that the facility is in compliance with all the requirements of 257 subpart D, based on concerns with the groundwater monitoring at the facility and with the closure plans. EPA is proposing that Gavin cease receipt of waste and initiate closure no later than 135 days from the date of EPA's final decision.

Finally, due to the nature of the noncompliance EPA has preliminarily identified at Gavin, EPA is proposing to issue a denial rather than a conditional approval. As discussed in greater detail in the proposed H.L. Spurlock Power Station decision, EPA is proposing that a conditional approval may be appropriate in situations where the actions necessary to bring the facility into compliance are straightforward and the facility could take the actions well before its requested deadline (or the alternative deadline that EPA has determined to be warranted). But in the case of Gavin, the noncompliance EPA has identified involves more complicated technical issues, where the specific actions necessary to come into compliance cannot be easily identified and/or cannot be implemented quickly. Specifically, if EPA is correct that the base of the FAR intersects with groundwater and that there is a lack of engineering controls in the PWP that would prevent infiltration into the consolidated CCR, the determination of whether the closure of

these units meets the performance standards in 40 C.F.R. 257.102(d) is highly technical and extremely complicated. As explained in Section III.E.1, Gavin provided insufficient information for EPA to identify specific actions that would need to be taken at the site. Nor could EPA conclude that Gavin could implement the necessary measures before its requested deadline.

VI. Effective Date

EPA is proposing to establish an effective date for the final decision on Gavin's demonstration of 135 days after the date of the final decision (i.e., the date that the final decision is signed). EPA is proposing to align the effective date with the new deadline that EPA is proposing to establish for Gavin to cease receipt of waste. EPA is doing so for all of the reasons discussed as the basis for proposing to establish the new cease receipt of waste discussed in Section IV of this document.

January 11, 2022
Date

Barry N. Breen
Acting Assistant Administrator

Attachment H

PROPOSED DECISION

Proposed Denial of Alternative Closure Deadline for Clifty Creek Power Station

SUMMARY:

Indiana-Kentucky Electric Corporation (IKEC) submitted a demonstration (referred to as the "Demonstration" in this document) to the Environmental Protection Agency (EPA) seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow two coal combustion residuals (CCR) surface impoundments, the West Boiler Slag Pond (WBSP) and the Landfill Runoff Collection Pond (LRCP), to continue to receive CCR and non-CCR wastestreams after April 11, 2021, at the Clifty Creek Power Station in Madison, Indiana. EPA is proposing to deny this extension request. In the Demonstration, IKEC requested an alternative closure deadline of December 5, 2022, for the WBSP and April 25, 2023, for the LRCP. EPA is proposing to deny the request for an extension based on a proposed determination that Clifty Creek Power Station has failed to demonstrate that there is no off-site capacity available for one of the wastestreams and that the facility is in compliance with the requirements of 40 C.F.R. 257 subpart D, as required in 40 C.F.R. § 257.103(f)(1)(iii).

DATES: *Comments.* Comments must be received on or before February 23, 2022.

ADDRESSES AND PUBLIC PARTICIPATION: The EPA has established a docket for this notice under Docket ID No. EPA-HQ-OLEM-2021-0587. EPA established a docket for the August 28, 2020, CCR Part A Rule under Docket ID No. EPA-HQ-OLEM-2019-0172. All documents in the docket are listed in the https://www.regulations.gov index. Publicly available docket materials are available either electronically at https://www.regulations.gov or in hard copy at the EPA Docket Center. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m.,

Monday through Friday, excluding holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742. You may send comments, identified by Docket ID. No. EPA-HQ-OLEM-2021-0587, by any of the following methods:

- Federal e-Rulemaking Portal: https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management, Docket ID No. EPA-HQ-OLEM-2021-0587, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier (by scheduled appointment only): EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. – 4:30 p.m., Monday – Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this action. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional

submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

Due to public health concerns related to COVID-19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at https://www.epa.gov/dockets.

The EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

FOR FURTHER INFORMATION CONTACT: For information concerning this proposed decision, contact:

- Kirsten Hillyer, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0542; email address: Hillyer.Kirsten@epa.gov.
- Frank Behan, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0531; email address: Behan.Frank@epa.gov.
- For more information on coal ash regulations, please visit https://www.epa.gov/coalash.

SUPPLEMENTARY INFORMATION:

Table of Contents

List of Acronyms

ACM – Assessment of Corrective Measures

ASD – alternate source demonstration

bgs – below ground surface

BMcD – Burns & McDonnell

BSHS – boiler slag handling system

CBI – Confidential Business Information

CCR – coal combustion residuals

C.F.R. – Code of Federal Regulations

CY – cubic yards

ELGs – Effluent Limit Guidelines and Standards for the Steam Electric Power Generating Point Source Category

EPA – Environmental Protection Agency

FERC – Federal Energy Regulatory Commission

FGD – flue gas desulfurization

ft amsl – feet above mean sea level

GWMCA – groundwater monitoring corrective action

ICPA – Inter-Company Power Agreement

IDEM – Indiana Department of Environmental Management

IKEC – Indiana Kentucky Electric Corporation

LRCP – Landfill Runoff Collection Pond

LVWTS – low volume wastewater treatment system

MGD – million gallons per day

MNA – monitored natural attenuation

MW – megawatts

mV - millivolts

NPDES – National Pollutant Discharge Elimination System

ORP – oxidation reduction potential

OVEC – Ohio Valley Electric Corporation

PJM – PJM Interconnection LLC

PRBs – permeable reactive barriers

PSD – prevention of significant deterioration

POTW – publicly owned treatment works

RTO – Regional Transmission Organization

SSI - statistically significant increase

SSL – statistically significant level

WBSP – West Boiler Slag Pond

I. General Information

A. What decision is the agency making?

The EPA is proposing to deny the extension request submitted by IKEC for two CCR surface impoundments, the WBSP and the LRCP, located at the Clifty Creek Power Station in

Madison, Indiana. IKEC submitted a demonstration to EPA seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the two impoundments to continue to receive CCR and non-CCR wastestreams after April 11, 2021. EPA is proposing that IKEC cease receipt of waste into the two CCR surface impoundments no later than 135 days after EPA issues a final decision.

B. What is the agency's authority for making this decision?

This proposal is being issued pursuant to the authority in 40 C.F.R. § 257.103(f).

II. Background

A. Part A Final Rule

In April 2015, EPA issued its first set of regulations establishing requirements for CCR surface impoundments and landfills (Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities,80 FR 21301) (the "CCR Rule"). In 2020, EPA issued the CCR A Holistic Approach to Closure Part A: Deadline to Initiate Closure rule (85 FR 53516 (Aug. 28, 2020)) (the "Part A Rule"). The Part A Rule established April 11, 2021, as the date that electric utilities must cease placing waste into all unlined CCR surface impoundments. The Part A Rule also revised the alternative closure provisions of the CCR rule (40 C.F.R. § 257.103) by allowing owners or operators to request an extension to continue to receive both CCR and non-CCR wastestreams in an unlined CCR surface impoundment after April 11, 2021, provided that certain criteria are met. EPA established two site-specific alternatives to initiate closure of CCR surface impoundments (40 C.F.R. § 257.103(f)), commonly known as extensions to the date to cease receipt of waste: 1) development of alternative capacity by the April 11, 2021 deadline is technically infeasible (40 C.F.R. § 257.103(f)(1)), and 2) permanent cessation of a coal-fired boiler(s) by a date certain (40 C.F.R. § 257.103(f)(2)).

The first site-specific alternative to initiate closure of CCR surface impoundments is *Development of Alternative Capacity is Technically Infeasible* (40 C.F.R. § 257.103(f)(1)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using its unlined surface impoundment for the specific amount of time needed to develop alternative disposal capacity for its CCR and non-CCR wastestreams. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(1). To have an alternative deadline approved, the regulation requires the facility to demonstrate that: 1) no alternative disposal capacity is currently available on or off-site of the facility; 2) the CCR and/or non-CCR waste stream must continue to be managed in that CCR surface impoundment because it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity either on or off-site at the facility by April 11, 2021; and 3) the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. §§ 257.103(f)(1)(i)-(iii). To support the requested alternative deadline, the facility must submit detailed information demonstrating that the amount of time requested is the fastest technically feasible time to complete development of alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A).

The second site-specific alternative to initiate closure of CCR surface impoundments is for the owner or operator to demonstrate that it will permanently cease operation of the coal-fired boilers at the facility. *Permanent Cessation of Coal-Fired Boiler(s) by a Date Certain*, (40 C.F.R. § 257.103(f)(2)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using an unlined CCR surface impoundment in the interim period prior to permanently stopping operation of coal-fired boiler(s) at the facility. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(2). The owner or operator must show that 1) the facility will cease operation of coal-fired boiler(s) and complete

closure of the CCR surface impoundment(s) by the specified deadlines (no later than October 17, 2023 for impoundments 40 acres, or smaller and no later than October 17, 2028 for impoundments larger than 40 acres); and 2) in the interim period prior to the closure of the coal-fired boiler, the facility must continue to use the CCR surface impoundment due to the absence of alternative disposal capacity both on-site or off-site. *Id*. Unlike the requirements for the first alternative, the owner or operator does not need to develop alternative disposal capacity. The regulations require a demonstration that: 1) no alternative disposal capacity is available on or off-site of the facility; 2) the risks from continued use of the impoundment have been adequately mitigated; 3) the facility is in compliance with all other requirements of 40 C.F.R. part 257 subpart D; and 4) closure of both the impoundment and the coal-fired boiler(s) will be completed in the allowed time. 40 C.F.R. § 257.103(f)(2)(i)-(iv).

B. Clifty Creek Power Station

On November 30, 2020, the Indiana-Kentucky Electric Corporation (IKEC) submitted a Demonstration pursuant to 40 C.F.R. § 257.103(f)(1) (the first alternative) requesting additional time to develop alternative capacity to manage CCR and non-CCR wastestreams at the Clifty Creek Power Station in Madison, Indiana. IKEC is the owner and operator of the Clifty Creek Power Station.

In the Demonstration, IKEC requests an alternative deadline of December 5, 2022, for the WBSP and April 25, 2023 for the LRCP, by which dates IKEC would cease routing all CCR and non-CCR wastestreams to, and initiate closure of, these impoundments.

As described in the Demonstration, IKEC intends to obtain alternative disposal capacity to the Clifty Creek WBSP CCR surface impoundment by: 1) converting its wet handling systems to a concrete settling tank system; and 2) constructing a new composite lined non-CCR low

volume wastewater treatment system (LVWTS) within the existing footprint of the WBSP. IKEC intends to obtain alternative disposal capacity for the LRCP by constructing a series of composite lined non-CCR wastewater basins within the footprint of the LRCP.

The EPA is providing additional details on the Clifty Creek facility below, including information on the generation capacity of the Clifty Creek Power Station, information on its CCR surface impoundments and landfills, and information on other non-CCR impoundments. This summary is based on information provided in the Demonstration.

1. Coal-fired boilers and generation capacity.

The Demonstration states that Clifty Creek operates six coal-fired generating units with a combined generation capacity of 1,304 net MW.

2. CCR units and CCR wastestreams.

IKEC currently operates three CCR units at Clifty Creek that are subject to the federal CCR regulations. The facility consists of two CCR surface impoundments, the WBSP and the LRCP, and one CCR landfill. The Demonstration states that the approximate surface area of the WBSP is 75 acres and the LRCP is 40 acres. However, previous reports have described the acreage of the LRCP as approximately 91 acres.[1]

The WBSP is an unlined CCR surface impoundment and subject to closure pursuant to 40 C.F.R. § 257.101(a)(1). This provision provides that IKEC must cease placing CCR and non-CCR wastestreams into the unit and either retrofit or initiate closure as soon as technically feasible, but not later than April 11, 2021. The Demonstration contains a certification that the

[1] Section 3 of the 2017 Annual GWMCA Report describes the LRCP as 91 acres.

Clifty Creek's surface impoundments are in compliance with all location restrictions specified in 40 C.F.R. §§ 257.60 through 257.64.

According to the Demonstration, the primary factor affecting the capacity development schedule at the Clifty Creek Power Station is the need to manage CCR and non-CCR wastestreams throughout construction of the LVWTS in a way that allows the plant to continue to meet the National Pollutant Discharge Elimination System (NPDES) discharge limits. IKEC states that it cannot cease the flow of CCR and non-CCR wastestreams and initiate closure of the WBSP until the concrete settling tank construction is complete, the new lined LVWTS is constructed within the footprint of the WBSP, and the non-CCR wastestreams are rerouted to the new lined LVWTS. The Demonstration explains that a tuning period is planned following construction of the new WBSP tank, and LRCP wastewater treatment system and certain system upsets may necessitate use of the Clifty Creek CCR surface impoundments for boiler slag and landfill runoff collection wastestreams during such events. According to the visual timeline included in the demonstration, these activities are scheduled to be completed by April 25, 2023.

The Demonstration identifies one CCR landfill at Clifty Creek. The landfill is approximately 40 acres in size; the landfill stormwater runoff and leachate management systems will be a part of the LRCP wastewater treatment system once it is operational.

III. EPA Analysis of Demonstration

The EPA has determined that the Demonstration IKEC submitted pursuant to 40 C.F.R § 257.103(f)(1) for the two CCR surface impoundments at the Clifty Creek Power Station was complete. EPA is proposing to deny the extension request for a number of reasons. EPA is proposing to deny the extension request with respect to a wastestream (drainage from the fly ash silo and the boiler building) because IKEC failed to adequately demonstrate that there is no off-

site capacity for this wastestream. EPA is also proposing to deny the extension request because IKEC has not demonstrated that the facility is in compliance with all the requirements of 40 C.F.R. part 257, subpart D. This is based on a failure to meet groundwater monitoring requirements at the facility, failure to meet corrective action requirements, failure of the plans to construct a concrete settling tank to obtain alternative capacity to meet the design requirements in the CCR regulations, and failure to prepare closure plans for the WBSP and LRCP that will ensure closure activities will meet the closure performance standards in the CCR regulations. Therefore, EPA is proposing that the extension request be denied.

EPA is proposing for IKEC to cease placement of all CCR and non-CCR wastestreams into the WBSP and LRCP no later than 135 days from the issuance of EPA's final decision discussed in Unit IV.

A. Evaluation of IKEC's Claim of No Alternative Disposal Capacity On or Off-Site

To obtain an extension of the cease receipt of waste deadline, the owner or operator must demonstrate that there is no alternative disposal capacity available on or off-site. 40 C.F.R. § 257.103(f)(1)(iv)(A). As part of this, facilities must evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). The owner or operator must also evaluate the site-specific conditions that affected the options considered. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*). Additionally, the regulations prohibit the owner or operator from relying on an increase of cost or inconvenience of existing capacity as a basis for meeting this criterion. 40 C.F.R. § 257.103(f)(1)(i).

The Demonstration must substantiate the absence of alternative capacity for each wastestream that the facility is requesting to continue placing in the CCR surface impoundment beyond April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). As soon as alternative capacity is

available for any wastestream, the owner or operator must use that capacity instead of the unlined CCR surface impoundment. 40 C.F.R. § 257.103(f)(1)(v). This means that if there is a technically feasible option to reroute any of the wastestreams away from the surface impoundment, the owner or operator must do so. 40 C.F.R. § 257.103(f)(1)(ii), (v). In the CCR Part A Rule preamble, EPA acknowledged that some of these wastestreams are very large and will be challenging to relocate, especially for those that are sluiced. However, the smaller volume wastestreams have the potential to be rerouted to temporary storage tanks. In such cases, the owner or operator must evaluate this option, and, if it is determined to be technically feasible, must implement it. 85 Fed. Reg. 53,541.

IKEC stated it requires the use of both the LRCP and the WBSP after April 11, 2021, due to the wastestreams that each of them handles. The LRCP is used to manage the stormwater from the western portion of IKEC's landfill and from off-site watershed. The WBSP receives boiler slag, boiler room sump, air heater wash flows, flue gas desulfurization (FGD) wastewater from the treatment system, coal yard sump flows, drainage from the fly ash silo and blower building, FGD waste sump, stormwater runoff, and leachate from the eastern portion of IKEC's landfill. Due to the number and the volume of the flows of the wastestreams that are currently managed in the WBSP, IKEC stated that it was unable to cease these flows prior to April 11, 2021.

1. Lack of Alternative On-site Capacity

IKEC concluded that there was no additional capacity available on-site for any of the wastestreams currently managed in the LRCP or the WBSP. EPA is proposing to agree with this conclusion.

The LRCP receives only stormwater runoff from the western portion of the landfill, as well as stormwater flow from more than 500 acres of watershed. According to the

Demonstration, the average amount of stormwater the LRCP receives is 0.796 million gallons per day (MGD) with an estimated 6.18 MGD for a 10-year, 24-hour storm. There is currently no other disposal unit on-site with sufficient capacity to handle the stormwater. Due to the size of this wastestream, the high variability with which it occurs, and the lack of other existing capacity, EPA agrees that IKEC could not reroute the stormwater to a different location on-site. EPA also agrees that temporary storage tanks would not work for these wastestreams due to the potentially large volumes of the waste and the area of the watershed runoff that cannot be captured in a tank.

The WBSP currently manages one CCR wastestream, boiler slag, and a variety of non-CCR wastestreams. The boiler slag is sluiced using boiler slag transport water to the WBSP at an average flowrate of 2.9 MGD. The WBSP manages a variety of non-CCR wastestreams with the following average flows: boiler room sump (7.98 MGD), air heater wash flows (N/A, outage flow only), FGD wastewater treatment system (0.37 MGD), coal yard sump (0.04 MGD), drainage from fly ash silo and blower building (0.10 MGD), FGD waste sump (0.03 MGD), and stormwater runoff and leachate from east portion of landfill (0.14 MGD). IKEC stated the only disposal capacity currently available on-site with sufficient capacity to manage the combined wastestreams is the WBSP and that IKEC lacks the space to install a temporary settling tank on the property for the boiler slag and the non-CCR wastestreams. IKEC stated that if it were to use a temporary solution to allow the WBSP to be removed from service, it would require 550 frac tanks per day to manage the volume of waste (not including stormwater contributions). The Demonstration also stated that it would require significant site development for containment measures and that the attendant interconnecting piping would pose an unacceptable amount of potential leaks. Additionally, IKEC stated that due to the solids content, five of these frac tanks

would need to be replaced daily. EPA is proposing to determine that these are reasonable conclusions, and that they appear to be supported by the documentation submitted with the Demonstration; therefore, EPA proposes to find that there is no available on-site capacity to accept the WBSP wastestreams.

2. Lack of Off-site Alternative Capacity

IKEC concluded that off-site alternative capacity was not a technically feasible option for the CCR or non-CCR wastestreams generated at Clifty Creek. EPA is proposing to disagree with that conclusion, on the grounds that IKEC failed to adequately demonstrate that off-site alternative capacity is not available for each wastestream.

IKEC stated that it is not feasible to provide off-site treatment or disposal of the large volume of non-CCR wastestreams currently routed to the WBSP and LRCP. Off-site disposal of these sluiced CCR and non-CCR wastestreams would require both on-site temporary storage and significant daily tanker traffic. The LRCP and the WBSP currently only receive wet generated wastestreams ranging in volume from 0.04 to 7.8 MGD. Because the wastestreams are wet generated, IKEC evaluated the feasibility of trucking the wastestreams off-site. IKEC provided the daily tanker trucks requirements (assuming 7,500 gallon capacity per truck) for each CCR and non-CCR wastestream (Table 1).

Table 1: CCR and non-CCR wastestreams and daily trucks required

Wastestream	Flowrate (MGD)	Trucks per day (approximate)	Notes
Boiler slag sluice to WBSP	2.90	380	If a POTW[2] could be identified
Boiler room sump flows to WBSP	7.95	1,060	

[2] POTW – publicly owned treatment works

FGD wastewater treatment system flows to WBSP	0.37	50	
Coal yard sump flows to WBSP	0.04 – 5.60	5 increasing to 740 during rain events	
Drainage from fly ash silo and blower building	0.10	13	
Stormwater runoff leachate from east portion of landfill to WBSP	0.14 – 1.94	18 increasing to 250 during rain events	
Landfill leachate and stormwater runoff from west portion of landfill to LRCP	0.796 – 6.18	106 increasing to 820 during rain events	

As seen in the table, the number of trucks required per day per wastestream varied from 5 to 1,060. IKEC stated that the significant daily tanker truck traffic (over 1,600 trucks and over 3,300 during rain events) for off-site disposal would result in increased potential for safety and noise impacts and further increases to fugitive dust, greenhouse gas emissions and carbon footprint that may require a Prevention of Significant Deterioration (PSD) permit and modification under the Clean Air Act Permit Program if the calculated increases in emissions are over the PSD limits. IKEC additionally stated that the increased truck traffic would be challenging to plan for and reliably perform at Clifty Creek, regardless of whether suitable disposal locations can be identified. IKEC stated that in order to truck the wastestreams off-site they would also need temporary storage tanks and a POTW to accept the wastestreams. IKEC further stated that setting up contractual arrangements for a local POTW to accept the wastewater would prove to be difficult because they also have to meet NPDES discharge limits. Additionally, the temporary wet storage needed to accommodate off-site disposal would require

reconfiguration, design, installation, and associated environmental permitting that would extend the overall compliance schedule. IKEC stated that the NPDES outfall permit would need to be modified for the WBSP due to eliminating the flows to the surface impoundment if the wastestreams were to be trucked off-site. Therefore, IKEC determined that diverting the wastestreams off-site is not possible and they all need to continue to be managed on-site.

It is EPA's understanding of the Demonstration that IKEC evaluated the off-site disposal capacity options for all the wastestreams together rather than evaluating the potential for each individual wastestream to be sent off-site for disposal. This alone would be a basis for denial. As stated in the Part A final rule preamble, "[T]he final rule requires owners and operators to cease using the CCR surface impoundment as soon as feasible, to document the lack of both on and off-site capacity for each individual wastestream, and expressly requires that as capacity for an individual wastestream becomes available, owners or operators are required to use that capacity…" (85 FR 53541). See, 40 CFR 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v). IKEC also provided no evidence that it attempted to find a POTW that could accept any of the individual wastestreams. Based on this, EPA is proposing to find that IKEC did not properly evaluate the possibility of trucking each individual wastestream off-site (such as the fly ash silo and boiler building flows) to a POTW.

There are a few wastestreams that based on volume alone could theoretically be diverted to an off-site POTW. With regard to the coal yard sump flows, EPA considers it is reasonable for a facility to divert a wastestream off-site using five trucks per day. However, during a rain event, 740 trucks per day would be required to divert the waste off-site; EPA considers this to be unreasonable. This would require approximately 32 trucks per hour for 24 hours per day. For the drainage from the fly ash silo and boiler building, EPA believes it is also reasonable that this

wastestream could in theory be diverted off-site, based on IKEC's estimate that it would take 13 trucks per day. EPA also considers that the FGD wastewater treatment system flows could also potentially be diverted off-site, based on the estimates that it would take roughly 2 trucks per hour. As part of analyzing the Demonstration, EPA evaluated facilities in a 50-mile radius of Clifty Creek to which the wastestreams could potentially be diverted. EPA found 30 facilities with an industrial wastewater permit. IKEC failed to demonstrate that none of these facilities could accept any individual wastestream. EPA was unable to independently confirm that no off-site location could accept these wastestreams because the Demonstration contained no information on the chemical compositions of the wastestreams and the processing capabilities of the facilities. Finally, IKEC provided no documentation substantiating the claim that every individual wastestream must continue to be managed in the impoundments to ensure compliance with its NPDES permit.

Based on the above, EPA is proposing to conclude that IKEC did not provide sufficient evidence that each of its different wastestreams needs to continue to be managed in the CCR surface impoundments. Nor did IKEC provide sufficient evidence that an off-site facility is not available to process all of its wastestreams. EPA cannot confirm IKEC’s conclusion that it is infeasible to manage its wastestreams off-site. Therefore, EPA is proposing to determine that IKEC has failed to demonstrate that there is no capacity available off-site for its wastestreams.

B. Evaluation of IKEC’s Analysis of Adverse Impacts to Plant Operations

In the Part A Rule, EPA stated that it is important for the facility to include an analysis of the adverse impacts to the operation of the power plant if the CCR surface impoundment could not be used after April 11, 2021. EPA stated that this is an important factor in determining whether the disposal capacity of the CCR surface impoundment in question is truly needed by

the facility. EPA required that a facility provide analysis of the adverse impacts that would occur to plant operations if the CCR surface impoundment in question were no longer available. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*ii*). EPA is proposing to find that there would be adverse impacts to the power plant if the CCR impoundment could not be used after April 11, 2021.

In the Demonstration, IKEC stated that it sells the entire generating capacity to its parent company Ohio Valley Electric Corporation (OVEC) at cost under the Federal Energy Regulatory Commission (FERC) approved OVEC-IKEC Power Agreement, and such capacity is exclusively committed and available to OVEC's owners or their affiliates (the Sponsoring Companies) under the terms of the FERC-approved Inter-Company Power Agreement (ICPA). Under the ICPA, the Sponsoring Companies are responsible for their share of OVEC's costs and expenses, including for debt and other long-term obligations. This agreement went into effect on August 11, 2011 and extends through June 30, 2040. OVEC is a member of the PJM Interconnection LLC (PJM) Regional Transmission Organization (RTO).

IKEC additionally stated that the CCR impoundments at Clifty Creek are the primary component of the existing wastewater treatment systems. According to the Demonstration, if the facility were to be forced to stop using the CCR surface impoundments, the Clifty Creek Power Station would be forced to cease operation. Therefore, the Sponsoring Companies would not receive their allocation of the electric capacity and energy from Clifty Creek to supply electricity to their retail public utility and electric power cooperative customers in Indiana and many neighboring states. IKEC further stated in the Demonstration that a cessation of operations at the Clifty Creek Power Station could cause increased and accelerated costs to OVEC and IKEC, including accelerated costs of demolition and decommissioning of the Clifty Creek Power Station. In addition, IKEC stated that an unplanned loss of such generating capacity might

negatively impact grid stability and power markets in the PJM and surrounding regions. IKEC then concluded that in order to continue to operate, generate electricity, and ultimately comply with the CCR rule, the ELGs, and the facility's NPDES permit conditions, the Clifty Creek Power Station must continue to use both the WBSP and the LRCP.

EPA proposes to find that if Clifty Creek were unable to continue using the CCR surface impoundments, and if no other on or off-site alternative capacity is available, there would be adverse impacts on the ability to run the associated boiler(s) such that a planned temporary outage would likely be required. As discussed in Unit IV, EPA disagrees with IKEC's claims regarding the broader impact of such an outage.

C. Evaluation of IKEC's Site-Specific Analysis for the Alternative Capacity Selected

To support the alternative deadline requested in the demonstration, the facility must submit a workplan that contains a detailed explanation and justification for the amount of time requested. 40 C.F.R. § 257.103(f)(1)(iv)(A). The written workplan narrative must describe each option that was considered for the new alternative capacity selected, the time frame under which each potential capacity could be implemented, and why the facility selected the option that it did. *Id*. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). The discussion must include an in-depth analysis of the site and any site-specific conditions that led to the decision to implement the selected alternative capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*).

In this section, EPA explains why it is proposing to agree with IKEC's determination that certain alternate capacity options were not feasible and summarizes the option selected by IKEC.

1. Review of Alternative Capacity Options

IKEC reviewed the various alternative capacity options EPA used in developing the Part A Rule and conducted an analysis of their feasibility at Clifty Creek. *See Table 2-4 of the Demonstration*. In this table IKEC used the average development time EPA calculated for each of the alternative capacity options (see 85 FR 53534) and discussed whether each alternative would be feasible at the site. IKEC determined that two methods were not technically feasible at Clifty Creek: a new surface impoundment and a temporary treatment system. EPA is proposing to agree with this determination.

IKEC determined that a new surface impoundment was not possible due to real estate constraints. Clifty Creek Power Station is bound by the Ohio River to the south, Crooked Creek and a golf course to the east, Indiana Highway 56 to the north, and farmland and residential areas to the west. The site is also bisected by Clifty Creek and a limestone ridge known as the Devil's Backbone. Figure 3 in Appendix A of the Demonstration provided additional detail of the existing site conditions, including the property boundaries, floodplain limits, and topography, as well as the proposed settling tank, LVWTS, and landfill pond footprints. IKEC stated that it is also not possible to construct a new lined LVWTS with associated piping, chemical feed, and power supply that is large enough to receive non-CCR wastestreams and be outside the existing WBSP footprint. Additionally, by constructing the new, lined LVWTS within the existing footprint of the WBSP, IKEC asserted that the Clifty Creek Station would avoid impacts to waters of the United States and other natural resources in the Clifty Creek watershed as part of this project.

IKEC determined a temporary treatment system would also not be technically feasible because Clifty Creek could not build a system that could handle a flowrate of 9.6 MGD.

Additionally, Clifty Creek lacks the real estate space to build such a system, as explained previously.

IKEC determined that retrofitting the CCR impoundments was technically feasible but did not select this option. IKEC stated that retrofitting would extend the compliance schedule for the WBSP, although IKEC did not provide information on how much additional time would be needed in order to retrofit. According to the Demonstration, the additional time would be needed to completely remove all the CCR from the impoundment while continuing to use the area for disposal of both CCR and non-CCR wastestreams.

Ultimately IKEC determined that the best option is a multiple technology system composed of a concrete settling tank system and wastewater treatment system for its boiler slag and a series of non-CCR wastewater basins, along with a wastewater treatment system.

EPA is proposing to conclude that IKEC adequately evaluated their site-specific limitations. Based on the review of the maps provided by IKEC, it appears that the facility has insufficient space to build outside of the existing CCR surface impoundment footprints. EPA reviewed satellite images and the figures provided in the Demonstration and these show that there is very limited undeveloped real estate currently available on the facility's property.

2. Detailed description of selected alternatives

The detailed descriptions below have been excerpted from the Demonstration.

(a) Alternative Disposal Capacities for the WBSP

The new solid waste management units that are being constructed within the footprint of the WBSP are a concrete settling tank (also referred to as the Boiler Slag Handling System (BSHS)) and the LVWTS. Prior to the start of construction, IKEC will reroute the wastestreams

to the southern portion of the WBSP. Once wastestreams are rerouted, it will begin to dewater the northern areas of the WBSP where the new disposal capacities will be constructed.

The concrete settling tank will consist of three chambers that are sized to settle boiler slag material and mill rejects from the sluice water. Overflow from the chambers will collect in a recycle tank for recirculation back through the boiler slag sluicing system. The system will operate with sluice water being directed to one of the chambers, with the second chamber being dewatered and cleaned of boiler slag material, and the third chamber in waiting to receive sluice flows or upset flows if needed.

The concrete settling tank will be constructed over CCR material. The footprint of the tank will be preloaded prior to installing the concrete structure to consolidate the material and reduce the potential for differential settlement and the resulting cracking of the tank. The pre-loading (aka surcharge loading) is to consolidate the CCR material and subgrade soils in the area. The schedule is based on the contractor placing approximately 140,000 cubic yards (CY) of CCR material as part of the surcharge effort. After the surcharge material is placed, it will remain for about two months. The contractor will then excavate approximately 75,000 CY of the surcharge material as required to support the new concrete settling tank foundation structure. The contractor will then construct the concrete settling tank and recycle tank floor and walls along with supporting system foundations. The contractor will then backfill the settling tank after the walls are complete. Following this, the contractor will install the stack out slab area. Lastly the contractors will install the mechanical and electrical systems and equipment needed for the tank. During the construction of the tank, the contractor will also begin working on the construction of the LVWTS.

The tank is being designed to meet ACI 350-06 requirements for water-retaining concrete structures with normal environmental exposure (exposure to liquids with a pH greater than 5, or exposure to sulfate solutions 1,000 ppm or less).

The LVWTS is a series of basins that are designed to manage the non-CCR wastestreams. The north basin (i.e., primary basin) is currently sized to handle 4 million gallons of air heater wash with additional storage for a 50-year, 24-hour storm event and 2 feet of dead storage for solids accumulation. The south basin (i.e., secondary basin) is sized to provide 24 hours of retention time at the average daily flow rate. The LVWTS will discharge to the Ohio River through a new NPDES outfall. The two basins will operate in series except during air heater wash events where wash water will be directed to the primary basin and all other flows will be directed to the secondary basin. The LVWTS will also be constructed over CCR material in order to minimize the overall compliance schedule by limiting the amount of borrow material required to complete the project and to balance cut and fill within the existing basin. The contractor will regrade approximately 350,000 CY of CCR material in the construction area for the LVWTS. Furthermore, removing all the CCR material from the WBSP and constructing a new, lined LVWTS is not feasible while all the CCR and non-CCR wastestreams continue to be routed to the unit. The LVWTS will receive a composite liner system. The footprint of the new LVWTS will be graded and stabilized prior to installing the liner system. In addition to providing containment for the wastestreams discharged to the new LVWTS, the composite liner will also act as a cover system over underlying CCR materials that remain. The composite liner system will likely consist of a geosynthetic clay liner, 60 mil HDPE, geotextile, and 12 inches of suitable fill material. Additionally, 18 inches of riprap will be placed on the pond slopes and a

minimum of 6-inches of concrete will be placed over the bottom of the primary basin to facilitate cleanout.

(b) Alternative Disposal Capacities for the LRCP.

IKEC is planning on constructing new non-CCR wastewater basins to manage the landfill leachate and stormwater. The detailed engineering for the new capacities to be built in the LRCP will be conducted while the construction in the WBSP is happening. As stated in the Demonstration, the steps that will happen to construct new capacity are as follows:

- Grading in a new stormwater ditch to divert off-site runoff around the LRCP to a new stormwater outfall south of the LRCP (approximately 140,000 CY of cut/fill).
- Dredging material from the proposed footprint of the new lined leachate and stormwater treatment systems (approximately 190,000 CY).
- Installing a new berm (approximately 69,000 CY of cut/fill) for the west leachate collection pond upstream of the leachate and stormwater treatments systems. The collection pond (5.8 acres) will accept landfill flows during construction of the treatment systems and will receive a composite liner system consisting of a geosynthetic drainage layer, GCL, flexible membrane liner geotextile, and 12-inch protective cover layer. The collection pond will eventually overflow to the treatment pond.
- Installing a new berm (approximately 60,000 CY of cut/fill) within the footprint of the dredged area for the sediment pond. The sediment pond (6.6 acres) will also receive a composite liner system as described for the leachate collection pond. The sediment pond will overflow to a ditch, which will tie into Outfall 001. The ditch will be constructed in the LRCP closure area and capped with the LRCP cover system.

- Installing a new berm (approximately 28,000 CY of cut/fill) within the footprint of the dredged area for the leachate treatment pond. The treatment pond (2.1 acres) will overflow to the sediment pond and will also receive a composite liner system.
- Installing a new leachate collection pond (2.0 acres) on the east side of the landfill. The new perimeter berm will require approximately 18,000 CY of cut/fill and will also receive a composite liner system. The east leachate collection pond will have the capability to overflow via an internal outfall to stormwater ditches that will be incorporated into the WBSP closure design.
- Once the landfill ponds are in place, the remaining LRCP area may be closed. IKEC will continue to work so as to expedite the ultimate closure of the LRCP and will provide regular updates per the requirements of the CCR Rule.

D. Evaluation of IKEC's Justification for Time Requested

Facilities must justify the amount of time requested in the demonstration as the fastest technically feasible time to develop the selected alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*iii*). The workplan must contain a visual timeline and narrative discussion to justify the time request. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). The visual timeline must clearly indicate how each phase and the steps within that phase interact with or are dependent on each other and the other phases. Additionally, any possible overlap of the steps and phases that can be completed concurrently must be included. This visual timeline must show the total time needed to obtain the alternative capacity and how long each phase and step is expected to take. The detailed narrative of the schedule must discuss all the necessary phases and steps in the workplan, in addition to the overall time frame that will be required to obtain capacity and cease receipt of waste. The discussion must include: 1) why the length of time for each phase and

step is needed, 2) why each phase and step must happen in the order it is occurring, 3) a discussion of the tasks that occur during the specific step, and 4) the tasks that occur during each of the steps within the phase. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). This overall discussion of the schedule assists EPA in understanding whether the time requested is warranted. Finally, facilities must include a narrative on the progress made towards the development of alternative capacity as of the time the demonstration was compiled. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*4*). This section of the Demonstration is intended to show the progress and efforts the facility has undertaken to work towards ceasing placement of waste in the CCR surface impoundment and to determine whether the submitted schedule for obtaining alternative capacity was adequately justified at the time of submission.

IKEC requested an alternative deadline of December 5, 2022, for the WBSP and April 25, 2023, for the LRCP. IKEC stated the primary driver of the time requested is that it will need to continue to manage the wastestreams within the WBSP and the LRCP, while constructing the new systems within the footprints of these two CCR surface impoundments and operating in such a way that will allow Clifty Creek to meet the NPDES discharge limits. IKEC believes the requested alternative closure deadlines are the fastest "technically feasible" as that term is defined at 40 C.F.R § 257.53. EPA proposes to find that these deadlines are the fastest technically feasible for the plans presented.

IKEC began by working with Burns McDonnell (BMcD) on the initial engineering and design for the project to put out for subcontracts and to submit permit applications to the Indiana Department of Environmental Management (IDEM). IKEC stated it will need to secure both modifications to its existing NPDES permit and new permits prior to installing the concrete settling tanks, the LVWTS and the associated non-CCR wastestream piping reroutes, and

chemical feed systems, as well as securing permits for the WBSP closure. IKEC allowed six months for permitting to happen concurrently with other tasks. However, the permit modifications must be completed before the construction associated with the concrete settling tanks, WBSP closure, and the new LVWTS. Since submission of the Demonstration, EPA has spoken with IDEM about the permits for the closure plans. On May 17, 2021 IDEM approved the Phase I Closure Plan for the WBSP. IKEC filed for a petition for review of this approval on June 1, 2021. EPA is unaware if IDEM has received the Phase II Closure Plan for the WBSP. IDEM is actively working with IKEC to reach an agreement on the Phase I Closure Plan.

In the Demonstration, IKEC stated that it has made considerable progress in obtaining alternative capacity. IKEC, Stantec (an engineering consultant), and BMcD have gone through multiple iterations of the project and cost estimating of the best compliance solution for the plant. BMcD and IKEC have completed the project scope and cost estimate development efforts, have selected a preferred compliance solution for the plant, and are finalizing the contracting approach. IKEC has also completed water sampling efforts and preliminary design for the BSHS, laser scans have been completed in the boiler areas, and the BSHS geotechnical investigation. IKEC additionally stated that it did not have a closure trigger for the WBSP prior to the finalization of the Part A Rule. The LRCP did trigger closure due to the detection of a statistically significant level (SSL) of a constituent in Appendix IV to 40 C.F.R. part 257 above a groundwater protection standard. IKEC also stated in the Demonstration that it paused its CCR/ELG compliance strategy until the final rules were published to know the full extent of the impact of these rules.

EPA compared these statements in the narrative of the Demonstration to the visual timeline. The visual timeline shows that the Budgetary and Front-end Engineering Design

(FEED) Study lasted from May 26, 2020, until November 16, 2020. Most of this time was used to conduct the initial geotechnical investigation (80 days). However, the timeline does not show the multiple iterations of the planning, designing, and cost estimating efforts of the new capacity that was indicated in the narrative. Therefore, IKEC likely started planning earlier than shown on the visual timeline.

Based on all the above, EPA proposes to find that the construction time frames for the plans are reasonable. Given the chosen methods for obtaining alternative capacity for the wastestreams, the time frames requested appear to be the fastest "technically feasible." Several of the tasks are happening concurrently and little to no time is wasted by waiting for the next step to occur. Therefore, EPA is proposing to find that the requested deadlines of December 5, 2022, and April 25, 2023, for the WBSP and LRCP respectively, are the fastest technically feasible for the development plans presented.

E. Evaluation of IKEC's Compliance Documentation

The Part A Rule requires that a facility must be in compliance with all the requirements in 40 C.F.R. part 257, subpart D in order to be approved for an extension to the cease receipt of waste deadline. 40 C.F.R. § 257.103(f)(1)(iii). Various compliance documentation must be submitted with the demonstration for the entire facility, not just for the CCR surface impoundment in question. 40 C.F.R. § 257.103(f)(1)(iv)(B). Additionally, EPA evaluated the information presented in the narrative relating to the closure or retrofit of the impoundment and the development of the new alternative disposal capacities to ensure compliance with the CCR regulations.

The first group of compliance documents required to be included in the Demonstration are related to documentation of the facility's current compliance with the requirements governing

groundwater monitoring systems. The Agency required copies of the following documents: 1) map(s) of groundwater monitoring well locations (these maps should identify the CCR units as well); 2) well construction diagrams and drilling logs for all groundwater monitoring wells; 3) maps that characterize the direction of groundwater flow accounting for seasonal variation; 4) constituent concentrations, summarized in table form, at each groundwater monitoring well monitored during each sampling event; and 5) description of site hydrogeology including stratigraphic cross-sections. 40 C.F.R. §§ 257.103(f)(1)(iv)(B)(*2*)-(*4*).

The second group of documents EPA required was the facility's corrective action documentation, if applicable, and the structural stability assessments. A facility must submit the following documentation: the corrective measures assessment required at 40 C.F.R. § 257.96, progress reports on remedy selection and design; the report of final remedy selection required at 40 C.F.R. § 257.97(a); the most recent structural stability assessment required at 40 C.F.R. § 257.73(d), and the most recent safety factor assessment required at 40 C.F.R. § 257.73(e). 40 C.F.R. §§ 257.103(f)(1)(iv)(B)(*5*) through (*8*).

1. Construction of New Units

EPA has preliminarily identified several areas in which IKEC's proposal for constructing alternative capacity appear not to comply with the CCR regulations, including those applicable to the construction of new CCR surface impoundments. EPA is proposing to determine that IKEC has failed to demonstrate compliance with 40 C.F.R. § 257.103(f)(1)(viii).

(a) Construction of new CCR surface impoundments. The concrete settling tanks that IKEC plans to build appear to be a CCR surface impoundment, but IKEC has not demonstrated that the tanks meet the requirements for constructing a new CCR surface impoundment found at 40 C.F.R. § 257.72. 40 C.F.R. § 257.103(f)(1) provides that in order to be approved, a facility

must demonstrate compliance with all of the requirements of that subsection. One of those requirements is that a facility must maintain compliance with all of subpart D. 40 C.F.R. § 257.103(f)(1)(viii). Based on the plans for construction of the alternative disposal capacity that, among other things, fails to include a composite liner in contravention of 40 C.F.R. § 257.72, EPA is proposing that IKEC has failed to meet this requirement. EPA will not approve a request for an extension that would subsequently be automatically revoked by operation of the regulation (e.g., during the tuning period).

The CCR regulations at 40 C.F.R. § 257.53 define a CCR surface impoundment as "a man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." Based on the information contained in the narrative, the proposed concrete settling tanks would appear to fall squarely within this definition.

In the narrative of the Demonstration, IKEC stated that

> "The contractor will dewater the north portion of the WBSP and place CCR material within the footprint of the concrete settling tank as required to support preparation of the subgrade. This area requires pre-loading (i.e. surcharge loading) to consolidate the CCR material and subgrade soils in the area. …The schedule duration is based on the contractor placing approximately 140,000 CY of CCR material as part of the surcharge loading effort. …The contractor will then excavate approximately 75,000 CY of the surcharge material to support the new concrete settling tank foundation construction. The contractor will construct the concrete settling tank and recycle tank floor and walls along with supporting system foundations. …The contractor will backfill the settling tank after the walls are complete."[3,4] See page 2-21 and 22 of the Demonstration.

[3] Although the Demonstration does not specify the CCR that will be used, EPA assumes that it will be CCR already in the WBSP. 40 C.F.R. § 257.101(a).
[4] IKEC stated this in the Demonstration submitted to EPA on November 30, 2020.

Based on this description and the accompanying diagrams, EPA interprets this to mean that the tank is partially below grade and surrounded by CCR material. In other words, this would be a man-made depression. In addition, the concrete settling tank will contain both boiler slag (a "CCR" under the definition in 40 C.F.R. § 257.53) and water. Finally, according to the Demonstration, the concrete settling tanks will be used to treat or store the boiler slag sluice water to remove the solids prior to flowing to the LVWTS. See page 2-15 of the Demonstration ("The concrete settling tanks will consist of three chambers, as shown in Figure 2 in Appendix A, which are sized to settle boiler slag material and mill rejects from the sluice water. Overflow from the chambers will collect in a recycle tank for recirculation back through the boiler slag sluicing system"). The conclusion that treatment is occurring is consistent with EPA's general view that concrete settling tanks are wastewater treatment systems. See, 85 FR 53526.

As a new CCR surface impoundment, the unit must comply with 40 C.F.R. § 257.72, which requires the installation of a composite liner as specified in the regulation. There is no discussion in the narrative of any plans to install such a liner beneath the concrete settling tanks. Further, the unit will need to comply with the groundwater monitoring requirements at 40 C.F.R. §§ 257.90-257.95. Of particular importance here would be the need to comply with the requirements of 40 C.F.R. § 257.91 relating to the placement and design of the groundwater monitoring system. Because the concrete basin would be constructed within a smaller footprint within the larger WBSP, reliance on the existing downgradient monitoring wells may not comply with the requirement that downgradient wells be placed at the current waste boundary. 40 C.F.R. § 257.91(a)(2). Based on the information provided, EPA cannot determine whether the design complies with these requirements. Moreover, it appears that under the current design, CCR from the closed WBSP would remain under the new basin; if this is accurate, it is not apparent how

the wells could be properly placed and constructed to avoid contamination from CCR consistent with 40 C.F.R. § 257.91(e).

2. Closure of WBSP and LRCP

The regulations provide two options for closing a CCR unit: closure by removal and closure with waste in place. 40 C.F.R. § 257.102(a). Both options establish specific performance standards. 40 C.F.R. § 257.102(c)-(d). IKEC intends to close both the WBSP and the LRCP by closing with waste in place. Based on the available information, EPA is proposing to determine that IKEC has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. § 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

EPA evaluated the information provided in the Demonstration, as well as in the written closure plans and other documents posted on IKEC's publicly accessible CCR website for the WBSP and the LRCP. After review of this information, EPA is proposing to determine that IKEC has not documented how the closure performance standards will be achieved. There are no details in the closure plan posted on IKEC's CCR website or any other document provided as part of the Demonstration that will allow EPA to determine that the closure performance standards will be met, in light of site conditions, at the impoundments. Therefore, EPA is proposing that IKEC has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. § 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

(a) Final Cover System of the WBSP and LRCP. IKEC did not provide enough detail in the Demonstration for EPA to determine whether the closure of these units will meet all the closure performance standards at 40 C.F.R. § 257.102(d). However, based on the information presented in the narrative, it appears that IKEC does not meet the closure performance standards in 40 C.F.R. § 257.102(d)(1)(ii) and (iii): "The owner or operator … must ensure that, at a

minimum, the CCR unit is closed in a manner that will: … (ii) Preclude the probability of future impoundment of water, sediment, or slurry; [and] (iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period." The designs submitted in the Demonstration for the concrete settling tank, the LVWTS, and the landfill runoff/leachate management ponds show that they are being built into the existing CCR in the closed units and will impound water on the final cover system of the closed WBSP and the LRCP. EPA is therefore proposing to find that the inclusion of the above plans for closure is inconsistent with the plain language of the requirement that to obtain approval, a facility must demonstrate that it will maintain compliance with all the requirements of subpart D. 40 C.F.R. § 257.103(f)(1)(viii).

Similarly, it is not clear from the narrative whether the final cover system for either the WBSP or the LRCP would meet the standards in 40 C.F.R. § 257.102(d)(3). First, IKEC failed to include any information on the final cover system for the entire WBSP. The only mention of a final cover system for the WBSP is in relation to the ditches used to convey flows from the LVWTS and portions of the closed pond to a new outfall structure. According to the narrative, the composite liner system of the new LVWTS is intended to also act as a cover system over the underlying CCR materials that remain. Based on the absence of any discussion, it appears that there will be no separate cover system between the concrete settling tanks and the CCR that will be left in place below it. EPA infers from this that IKEC intends for the concrete settling tanks to serve as the final cover system for this portion of the WBSP.

IKEC also failed to provide any information on the final cover system for the LRCP. According to the narrative, IKEC plans to install a composite liner system under the new landfill leachate ponds; although the narrative fails to specify this to be the case, EPA assumes the intent

is to have the composite liner system serve as the cover for this portion of the LRCP, similar to the plan for the WBSP.

The regulations require that any CCR that is left in place have a final cover system that meets the performance standard in 40 C.F.R. § 257.102(d)(3). The narrative should therefore have included a discussion of the final cover system for the entire WBSP and LRCP.

Second, as noted above, the liner system will not cover the entire surface area of the WBSP and potentially the LRCP. Under the current plan for the WBSP, the entire concrete settling tank system will not contain a composite liner. But the narrative contains no explanation of how this settling tank system, which will be sitting on top of compacted CCR within the footprint of the unit, meets the standards of 40 C.F.R. § 257.102(d)(3). The regulations provide that, "if a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section." 40 C.F.R. § 257.102(d)(3).

Finally, even if IKEC is correct that the composite liner system it intends to install over certain portions of the WBSP and LRCP will meet the performance standards of an alternative cover system under 40 C.F.R. § 257.102(d)(3)(ii), it is not clear that would be sufficient to ensure compliance with the closure standards as a whole. As explained earlier, EPA considers the concrete settling tank to be a CCR surface impoundment that requires a composite liner system. In order to construct a new impoundment on top of a closed impoundment, a facility would need to comply with both the liner requirements in 40 C.F.R. § 257.72 and the closure requirements in 40 C.F.R. § 257.102(d). To ensure the performance standard in both regulations are met, IKEC would need to complete the final cover system first and then build the liner

system above the final cover in a manner that does not disturb or negatively impact the final cover. In addition, EPA is concerned that if the basins that will comprise the LVWTS were to leak, the waste waters would collect on the top of the final cover system, that is, will impound water on top of the cover system in contravention of 40 C.F.R. § 257.102(d)(1)(ii).

Assuming EPA has properly understood IKEC's plans, there are some potential options that might address the compliance concerns. For example, one option would be to construct the new systems fully above the final closure grade of the CCR surface impoundments and have double containment with leak detection systems to prevent damage and impoundment of liquid on the final cover systems. A second potential option would be to close the units by removal prior to constructing the new systems, a process also known as retrofitting.

(b) Intersection between WBSP and Groundwater

EPA reviewed the History of Construction (October 20216), the Dam and Dike Annual Inspection Report (2019), the CCR Location Restrictions, and the 2019 Annual Groundwater Monitoring and Corrective Action (GWMCA) Report from IKEC's publicly accessible CCR compliance website to determine whether the base of the WBSP intersects with groundwater. The following information indicates that, at a minimum, a portion of the CCR in the WBSP is saturated with groundwater.

According to the History of Construction the bottom elevation of the WBSP is at 433.0 feet above mean sea level (ft amsl).[5] The 2019 Dam and Dike Annual Inspection Report states that at present conditions the elevation of CCR is 433 ft amsl and the depth of CCR is 7.5 ft.[6] EPA then used these two numbers to calculate the lower extent of the base elevation of the

[5] Clifty Creek WBSP – History of Construction (October 2016) page 3
[6] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 11

WBSP to be 425.5 ft amsl. Therefore, EPA has concluded that the lower extent of base elevation of the WBSP is between 425.5 and 433 ft amsl.

EPA then reviewed the WBSP piezometer data, and the groundwater elevations summarized in the Annual GWMCA Report to determine the maximum elevation of the groundwater and compare those elevations to the elevation of the base of the WBSP. The piezometer data from Figure 2 (West Boiler Slag Pond Piezometers Measurements) of the 2019 Dam and Dike Inspection Report[7],[8] show the static groundwater level elevations ranged between approximately 425 ft and 450 ft amsl. Furthermore, this 2019 report shows that maximum readings at each of the four piezometer locations exceeded the lower extent of the base elevation of the WBSP. Table A-3 of the 2019 Annual GWMCA Report[9] shows groundwater elevations range between 419.4 and 470.1 ft amsl for monitoring wells at the waste boundary of the WBSP. Additionally, the CCR Location Restrictions report [10] for the WBSP states that the top of the uppermost aquifer ranges from 397.3 to 453.8 ft amsl for monitoring wells at the waste boundary of the WBSP.

The groundwater elevation is consistently higher than 433 ft amsl, which is the highest reported point of the lower extent base elevation of the WBSP. As a consequence, EPA is proposing to conclude that at least a portion of the CCR within the WBSP is in contact with groundwater, and that there is a hydraulic connection between the uppermost aquifer and the CCR located with the WBSP.

(c) Intersection between LRCP and Groundwater

[7] Three piezometers are located at the crest of the constructed dike and one piezometer is located near the toe of the constructed dike of the WBSP.
[8] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 21
[9] 2019 Clifty Creek CCR Annual Groundwater Monitoring and Corrective Action Report. Page 38
[10] CCR Location Restrictions – Clifty Creek West Boiler Slag Pond – October 17, 2018

EPA reviewed the History of Construction (October 2016), the Dam and Dike Annual Inspection Report (2019), the CCR Location Restrictions, and the 2019 Annual GWMCA Report from IKEC's publicly accessible CCR compliance website to determine whether the base of the LRCP intersects with groundwater. The following information indicates that, at a minimum, a portion of the CCR in the LRCP is saturated with groundwater.

According to the History of Construction the maximum pool elevation is 501.4 ft amsl and the maximum depth of CCR material is 60 feet.[11] Using these two numbers, EPA calculated that the elevation of the base of the LRCP unit could be located at 441.4 ft amsl. By contrast, the 2019 Dam and Dike Annual Inspection Report states that the elevation of CCR is 475 ft amsl and the depth of CCR is 45 feet[12]. EPA then used these two numbers to calculate the bottom elevation of the LRCP to be 430 ft amsl. Based on these reports it appears that the lower extent of the base elevation of the LRCP is between 430 and 440 ft amsl.

EPA then reviewed the LRCP piezometer data, and the groundwater elevations summarized in the Annual GWMCA Report to determine the maximum elevation of the groundwater and compare those elevations to the elevation of the base of the LRCP. The piezometer data from Figure 4 (Landfill Runoff Collection Pond Piezometers Measurements) of the 2019 Dam and Dike Annual Inspection Report[13] show the static groundwater level elevations to be consistently above 440 ft. Table A-2 of the 2019 Annual GWMCA Report shows groundwater elevations that are greater than 440 ft.[14] Additionally, the CCR Location Restrictions report for the LRCP states "Based on an August 2016 Monitoring Well Installation Report, groundwater elevations measured during these gauging events ranged from

[11] Clifty Creek LRCP – History of Construction (October 2016) page 5
[12] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 13
[13] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 19
[14] 2019 Clifty Creek CCR Annual Groundwater Monitoring and Corrective Action Report. Page 38

approximately 429 to 497 feet above mean sea level (ft amsl) and ranged from approximately 437 to 452 ft amsl at three monitoring wells located southwest…"[15].

These data show that the groundwater elevations are consistently higher than 440 ft, which is the highest estimated base elevation of the LRCP. Accordingly, it appears that at least a portion of the CCR within the LRCP is in contact with groundwater. EPA is therefore proposing to determine that there is a hydraulic connection between the uppermost aquifer and the CCR located within the LRCP.

(d) Closure in Place Performance Standards.

EPA evaluated the Demonstration and closure-related information on IKEC's CCR website to determine whether IKEC adequately explained how the closure performance standards will be achieved during closure of the WBSP and LRCP in light of the evidence that at least a portion of each CCR surface impoundment appears to be in contact with groundwater. EPA's preliminary determination is that the explanation is inadequate. EPA is therefore proposing to determine that IKEC has failed to meet the requirement to develop an adequate closure plan and to demonstrate that the performance standards will be achieved during closure of the WBSP and the LRCP. 40 C.F.R. §§ 257.102(b), (d)(1)-(2).

The CCR closure requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. The general performance standards under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the

[15] CCR Location Restrictions – Clifty Creek Landfill Runoff Collection Pond – October 17, 2018. Page 11

CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i). Finally, the regulations require facilities to develop a written closure plan that describes the steps necessary to close the CCR unit, consistent with recognized and generally accepted good engineering practices. 40 C.F.R. § 257.102(b)(1). The plan must also include a written narrative describing how the unit will be closed in accordance with the section, or in other words, how the closure will meet the performance standards in the regulation. 40 C.F.R. § 257.102(b)(1)(i).

Neither the closure plans posted on IKEC's website nor the Demonstration describe the steps that will be taken to close the CCR units consistent with generally recognized good engineering practices, as required by 40 C.F.R. § 257.102(b). Nor does either document that the closure of the WBSP or the LRCP meets the requirements of 40 C.F.R. § 257.102. For example, the Demonstration provides insufficient details on how free liquids were to be eliminated from either the WBSP and the LRCP, and the October 2016 closure plan for both the WBSP and the LRCP only states that "Free liquid will be removed as part of the final closure of the CCR unit."[16,17] Such a discussion does not meet requirements for a closure plan as laid out in 40 C.F.R. § 257.102(b). And if EPA is correct that the base of the CCR surface impoundments

[16] "Closure Plan, CFR 257.102(b), Landfill Run-off Collection Pond, Clifty Creek Station, Madison, Indiana" October 2016. Page 3.
[17] "Closure Plan, CFR 257.102(b), West Boiler Slag Pond, Clifty Creek Station, Madison, Indiana" October 2016. Page 3.

intersects with groundwater, the closure plans would need to have discussed the engineering measures taken to ensure that the groundwater had been removed from the units prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the freestanding liquid in the impoundment and to all separable porewater in the impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater.

Similarly, neither the Demonstration nor the closure plans document how the WBSP and the LRCP will be closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the top, sides, and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. In this scenario, the CCR will be in continuous contact with water. This contact between the waste and groundwater provides a potential for waste constituents to be dissolved and to migrate

out of (or away from) the closed units. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit. The Demonstration does not discuss how this performance standard will be achieved for the WBSP and the LRCP, and the October 2016 closure plans for the WBSP and the LRCP states "Post-closure infiltration of liquids into the waste will be controlled through the design of the site grading plan, construction of an engineered cap system, and establishment of stormwater management system in accordance with engineering practices".[18]

In summary, based on available information, EPA cannot determine whether the closure performance standards will be met. This is a violation of 40 C.F.R. § 257.102(b), which requires facilities to develop a written closure plan that documents the steps that will be taken to complete closure and to ensure the performance standards are met. It may also demonstrate that IKEC has failed to comply with the performance standards for closure with waste in place in 40 C.F.R. § 257.102(d). EPA is therefore proposing to determine that IKEC has failed to comply with 40 C.F.R. § 257.102(b), and that IKEC has not demonstrated compliance with the performance standards applicable to the closure of the WBSP and LRCP in 40 C.F.R. § 257.102(d)(1)-(2). EPA is also proposing to find that LKEC's plans for closure are inconsistent with the plain language of the requirement that to obtain approval, a facility must demonstrate that it will maintain compliance with all the requirements of subpart D. 40 C.F.R. § 257.103(f)(1)(viii).

[18] *Id*. Page 2.

3. Groundwater Monitoring Compliance

The regulations require facilities to submit several groundwater monitoring compliance documents as part of their demonstrations so that EPA can thoroughly evaluate the groundwater monitoring network and the site hydrogeology for every CCR unit at the facility. EPA evaluated the documentation IKEC provided in the Demonstration for Clifty Creek and reviewed the 2017 through 2019 Annual GWMCA Reports. EPA is proposing to determine that the groundwater monitoring systems are inadequate for multiple reasons and therefore do not adequately demonstrate compliance with the regulations. First, groundwater flow characterization is inadequate because there are an insufficient number of groundwater elevation data points surrounding the CCR units to demonstrate groundwater flow direction. Second, an entire downgradient boundary of the multiunit system is unmonitored. Third, the placement of upgradient wells at both the LRCP and the WBSP and the placement of downgradient wells at the LRCP do not comply with 40 C.F.R. § 257.91. Fourth, two background wells appear to be contaminated by CCR and do not accurately represent background groundwater quality for the multiunit system or the WBSP.

Additionally, EPA is proposing to determine that the Alternative Source Demonstrations (ASDs) in the 2019 Annual GWMCA Report fail to meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii) and the Annual GWMCA Reports do not contain all information required by 40 C.F.R. § 257.90(e)(3), including statistical analyses, laboratory analytical reports, and the status of monitoring wells CF-15-01, CF-15-02 and CF-15-03. Finally, EPA is concerned that visual representation of information in the Demonstration is unclear and should be improved in future submittals.

(a) Characterizing Groundwater Quality

The CCR regulations require facilities to install a groundwater monitoring system that will "accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit…" and "accurately represent the quality of groundwater passing the waste boundary of the CCR unit." 40 C.F.R. §§ 257.91(a)(1) and (a)(2). In order to design a system that will accurately characterize background groundwater quality upgradient of a CCR unit, as well as at the downgradient waste unit boundary, it is necessary to characterize groundwater flow direction.

A groundwater divide functions as a geologic divide that separates groundwater. Groundwater flows on either side of the divide are independent (e.g., could flow in different directions). As a consequence, independent datasets are required from each side of the divide to accurately characterize groundwater flow conditions (e.g., flow direction and rate). The maps in the Demonstration and the Annual GWMCA Reports depict a groundwater divide separating the multiunit system on the north-northwest side of the property from the WBSP at the south-southeast side of the property.[19] There is insufficient groundwater elevation data to characterize groundwater flow direction at the multiunit system on the northwest side of the groundwater divide.

The Type I Landfill and LRCP occupy a combined 200-acre footprint and are monitored using a single, multiunit groundwater monitoring system. Groundwater flow conditions are not adequately characterized around the multiunit system boundary. To determine upgradient and downgradient directions and the overall groundwater flow, groundwater elevations must be known around the entire unit boundary. But flow direction cannot be determined around the entire multiunit system boundary because there are no monitoring points along the northwestern

[19] 2017 Annual GWMCA Report Figures B-1 through B-6

and southeastern boundaries of the system, which each span approximately a mile in length, where groundwater elevation data are reported.

(i) Characterization of Groundwater Quality at the Downgradient Waste Unit Boundary

EPA is proposing to determine that IKEC has failed to comply with the requirements of 40 C.F.R. § 257.91(a)(2) to install wells and conduct sampling that accurately represents the quality of groundwater passing the downgradient waste unit boundary and to monitor all potential contaminant pathways.

In 2016, the multiunit groundwater monitoring system included three background wells and six downgradient wells, three of which are located southwest of the multiunit system and three of which (CF-15-01, CF-15-02, and CF-15-03) are located northeast of it.[20] The 2017 Annual GWMCA Report shows a second groundwater divide at the multiunit system: groundwater flow is depicted to the northeast at the northeastern end of the multiunit system and in the opposite direction, to the southwest, at the southwestern end.[21] This means the northeast boundary of the multiunit system is a downgradient boundary. However, sampling at CF-15-01, CF-15-02, and CF-15-03 were not reported after November 2016. By failing to monitor the northeastern boundary of the multiunit system, IKEC has not met the requirements to characterize downgradient groundwater quality.

Additionally, information provided in the ASDs indicate that the multiunit system is inadequate to monitor multiple units. The ASDs include the statement that, “it would take 120 years for groundwater flowing beneath the Type I Landfill to reach the CCR monitoring wells.” In other words, downgradient monitoring wells CF-15-07, CF-15-08 and CF-15-09 do not characterize the quality of groundwater passing the waste unit boundary of the Type I Landfill.

---

[20] 2017 Annual GWMCA Report p.5
[21] Demonstration, Figure 6

Accordingly, EPA is proposing to determine that this multiunit system fails to accurately characterize groundwater quality at the downgradient boundary of the Type I Landfill as required by 40 C.F.R. § 257.91(a) because the wells are too far away.

(ii) Characterization of background

In general, background monitoring wells must be placed hydraulically upgradient of the CCR unit. Alternatively, a determination of background groundwater quality may utilize samples from wells that are not hydraulically upgradient of the CCR unit where, "(i) Hydrogeologic conditions do not allow the owner or operator of the CCR unit to determine what wells are hydraulically upgradient; or (ii) Sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells…" 40 C.F.R. § 257.91(a)(1).

Section 4.2.1 of the Demonstration states, "Due to the geologic setting of the Type I Landfill and LRCP, there were no suitable upgradient groundwater monitoring locations and upgradient monitoring wells were not installed." The Demonstration and the 2018 and 2019 Annual GWMCA Reports contained no groundwater elevation measurements or groundwater flow direction information around the west, north, or northeast boundary of the multiunit system to support this claim.

Background wells CF-15-04, CF-15-05, and CF-15-06 are located southeast of the center of the multiunit system. They are identified as background wells in the Annual GWMCA Reports. In 2018, two wells were added to the multiunit groundwater monitoring system as background wells. These wells, WBSP-15-01 and WBSP-15-02, are located on the other side of the Devil's Backbone groundwater divide from the multiunit groundwater monitoring system. This means the groundwater monitored in them does not flow to the multiunit system and is in a

groundwater formation that is distinct from the groundwater at the multiunit system. No information is provided that explains how groundwater from these wells is representative of background groundwater quality for the multiunit system, in accordance with the performance standard in 40 C.F.R. § 257.91(a)(1).

The boring logs for background wells WBSP-15-02 and WBSP-15-03[22] show they were both installed through CCR and are contaminated by CCR. 40 C.F.R. § 257.91(a)(1) requires that groundwater monitoring wells be installed to yield groundwater samples that will accurately represent the quality of background groundwater that has not been affected by a CCR unit. The boring logs of these wells indicate that boiler slag is present throughout the well borings; the Demonstration indicates both systems utilize these wells as background wells. EPA is proposing to conclude that wells WBSP-15-02 and WBSP-15-03 are contaminated by CCR and therefore fail to meet the performance standard at 40 C.F.R. § 257.91(a)(1). For this reason, these wells cannot be used as background wells at either the multiunit system or the WBSP.

A further concern is the use of these contaminated wells to conduct the analyses required by 40 C.F.R. § 257.93(h). This provision requires the facility to determine whether there has been a statistically significant increase (SSI) above background levels for each constituent in Appendix III to 40 C.F.R. Part 257, by comparing downgradient concentrations to concentrations in the background wells. Detection of concentrations of the constituents at SSIs serves as evidence that a CCR unit is leaking. Use of monitoring data from contaminated wells in the statistical background dataset for the both the WBSP and the multiunit system may have inflated the statistical background limits used for these comparisons. As a consequence, concentrations detected in the downgradient wells may be compared to an inaccurately high background level,

[22] Demonstration, Appendix B, PDF pp. 76-80.

potentially masking detection of SSIs. EPA cannot determine at this time whether additional SSIs would have been detected if background groundwater quality had been properly characterized using wells that are not impacted by CCR, but it is possible that appropriate background characterization could have resulted in additional SSIs or SSLs above a groundwater protection standard, resulting in assessment monitoring requirements for the WBSP or additional corrective action requirements for the LRCP.

(b) Alternative Source Demonstrations (ASDs)

If it is determined that there was an SSI over background levels for one or more of the constituents in Appendix III to 40 CFR part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD to show that a source other than the unit was the cause of the SSI. 40 C.F.R. § 257.94(e)(2). If a successful ASD for an SSI is not completed within 90 days, an assessment monitoring program must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSI. In order to rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD requires conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

ASDs have been conducted at the multiunit system for SSIs of multiple constituents. EPA is proposing to determine that the ASDs do not provide sufficient evidence that an alternative source exists and is the cause of the SSIs and SSLs, and that the conclusions of the ASDs demonstrate failure of the multiunit system to comply with the performance standard in 40 C.F.R. § 257.91(d). Additionally, IKEC has inappropriately concluded in the ASDs that different CCR units monitored by the same multiunit groundwater monitoring system could be in different

monitoring programs – one in detection monitoring and the other in assessment monitoring – at the same time.

In 2018, SSIs above background levels were identified for pH and boron at the multiunit system. IKEC concluded in an ASD that the SSIs for pH resulted from a source other than the multiunit system (i.e., a faulty pH meter). EPA does not dispute this ASD. In response to the SSIs for boron, IKEC both prepared ASDs and initiated an assessment monitoring program at the multiunit system.[23] All of the ASDs contain the following lines of evidence: historic ash placed below the LRCP is a known source of boron and is hydraulically connected to CF-15-09; boron had been detected near well CF-15-09 seventeen years before operation of the LRCP began; and the long travel time between the Type I Landfill and the southwest border of the multiunit groundwater monitoring systems means detections in CF-15-09 could not have come from the Type I Landfill.

In order to rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD must be supported by site-specific facts and analytical data. No direct evidence is provided to support a hydraulic connection between CF-15-09 and old historic ash, or that such a connection is sufficiently strong that the LRCP did not contribute to the boron SSIs. Historic data about boron detections may be relevant; however, its relevance raises questions about the ability of CF-15-09 to characterize groundwater quality at the downgradient unit boundary of the LRCP. EPA believes the data presented is not sufficient to support an ASD for the SSIs for boron. However, IKEC initiated assessment monitoring in 2018 for the LRCP, so a determination that the ASDs are invalid would not require further action at the LRCP. Once sampling data are

[23] 2019 Annual GWMCA Report, p. 3

available from a compliant groundwater monitoring system at the Type I Landfill, IKEC will be able to determine whether corrective action is required at the Type I Landfill.

Appendix E to the 2019 Annual GWMCA Report states, "Based on a successful Alternate Source Demonstration (ASD) (AGES 2019), OVEC determined that the Type I Landfill was not the source of the Boron. Therefore, the Type I Landfill returned to Detection Monitoring in January 2019. As an alternate source for Boron at the LRCP could not be established, the LRCP remains in Assessment Monitoring."

Multiunit groundwater monitoring systems are subject to the same performance criteria in 40 C.F.R. §§ 257.91(a) through (c) as groundwater monitoring systems for individual CCR units. Under 40 C.F.R. § 257.91(d), a multiunit system is a single groundwater monitoring system that monitors a combination of more than one CCR unit. Where a facility has chosen to install a multiunit groundwater monitoring system, the detection of SSIs trigger assessment monitoring for all CCR units covered by that system. 40 C.F.R. §§ 257.91(d), 257. 94(e). Similarly, the detection of SSLs would trigger corrective action for all its CCR units covered by that system. 40 C.F.R. §§ 257.91(d), 257. 95(g).

(c) Completeness of Reports and Clarity of Visual Representation of Data

IKEC has not provided laboratory analytical reports, statistical analyses, or any detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, normality test results) in the Annual GWMCA Reports. As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 CFR § 257.90(e)(3).

The purpose of the Annual GWMCA Report is to provide the most recently obtained groundwater monitoring and corrective action information as well as to allow review for

compliance with the requirements. The groundwater monitoring provisions in 40 CFR §§ 257.90 through 257.95 include numerous requirements (e.g., standards for lowest achievable quantitation limits, requirements to analyze unfiltered groundwater samples for total recoverable metals, and performance standards for various statistical methods). It is IKEC's responsibility to demonstrate that they are in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents EPA, states, or other stakeholders from evaluating compliance. For example, in Table 3-4 of the 2018 Annual GWMCA Report, it is noted that SSLs were detected in assessment monitoring but were not confirmed by resampling. The CCR regulations do not provide for resampling to confirm SSLs; however, certain statistical methods may inherently include resampling procedures. EPA cannot determine whether the approach used by IKEC complied with the requirements of 40 C.F.R. §§ 257.93 and 257.95 because the statistical analysis conducted is not included in the Annual GWMCA Reports.

Additionally, while the Demonstration has been determined to be complete, visual representation of data has been prepared in a way that makes it difficult to review and assess for compliance. For example, maps are cropped so closely that they are difficult to interpret – the multiunit groundwater monitoring system is not shown in its entirety on any map that also depicts its monitoring wells. Upgradient monitoring wells are not distinguished from downgradient wells and may not be depicted on the same map. Groundwater flow direction arrows are sometimes depicted with no information regarding the sampling data (i.e., date, groundwater elevation measurement locations and contours) that provided the basis for the arrows. Future submittals should include visual representation of data that provide relevant data with appropriate context to be easily reviewed.

As discussed previously, information about monitoring wells CF-15-01, CF-15-02, and CF-15-03 in the multiunit system were not included in the 2018 or 2019 Annual GWMCA Reports. EPA is unable to determine whether the missing information in the reports pertains to sampling data or problems encountered with these wells during sampling events, as would be required by 40 C.F.R. § 257.90(e)(3), or whether it pertains to their removal and decommissioning, as would be required by 40 C.F.R. § 257.90(e)(2). In any case, the 2018 and 2019 Annual GWMCA Reports are missing information required by 40 C.F.R. § 257.90(e) with respect to these wells.

4. Corrective Action Compliance

When groundwater assessment monitoring shows SSLs of any constituent and an alternative source is not identified within 90 days, a facility must undertake several corrective action steps, including conducting an Assessment of Corrective Measures (ACM) and selecting a remedy to address the release. 40 CFR §§ 257.96 through 98. Molybdenum was detected at SSLs during the October 2018[24] assessment monitoring event at the multiunit system. At well CF-15-08, detected levels of molybdenum exceeded the groundwater protection standard of 100 µg/L in October 2018 at 524 µg/L and December 2018 at 429 µg/L. IKEC is therefore subject to corrective action requirements for the LRCP. EPA has reviewed the ACM included as Appendix E5 to the Demonstration, which is a revised ACM dated November 2020.

EPA is proposing to determine that IKEC has failed to comply with several corrective action requirements. It appears that there are not enough wells installed to characterize the release from the LRCP, and IKEC appears to have failed to estimate the mass of the release and to install a monitoring well at the downgradient facility boundary as required by 40 C.F.R. §§

[24] 2018 Annual GWMCA Report, Table 3-4

257.95(g)(1)(i)-(iii). Further, EPA is proposing to determine that the ACM fails to meet all the requirements in 40 C.F.R. 257.96(c). Finally, EPA is proposing to determine that IKEC has failed to select a remedy "as soon as feasible." 40 C.F.R. § 257.97(a).

(a) Characterization of the Release and Site Conditions

Under 40 C.F.R. § 257.95(g)(1), IKEC is required to characterize the nature and extent of the release and any relevant site conditions that may ultimately affect the remedy selected. The characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary pursuant to 40 C.F.R. §§ 257.96 and 257.97 to effectively clean up all releases from the CCR unit. The requirement to characterize the release includes gathering data to quantify the levels at which constituents are present, quantifying the estimated mass of the release, and installing at least one well at the facility boundary in the direction of contaminant migration. 40 C.F.R. §§ 257.95(g)(1)(i)-(iv). All this work must be completed within 180 days of detecting an SSL of a constituent in Appendix IV to 40 C.F.R. part 257 (such as molybdenum), unless a 60-day extension is warranted. 40 C.F.R. § 257.96(a). Based on the information contained in the ACM, IKEC appears to have met none of these requirements.

The ACM does not indicate that IKEC has placed a well downgradient of the unit at the facility boundary to determine whether contaminants have migrated off-site, as required by 40 C.F.R. § 257.95(g)(1)(iii), and EPA is unable to determine if this requirement has been met based on the Demonstration. Additionally, in the ACM, the bullets that list the objectives of site characterization in Section 5.0 omit the requirement in 40 C.F.R. § 257.95(g)(1)(ii) to estimate the mass of the release, and this information is subsequently missing from the characterization. The ACM also does not discuss efforts to collect data on the levels of constituents in Appendix

IV to 40 C.F.R. part 257 that are present in the material released, as required by 40 C.F.R. § 257.95(g)(1)(ii).

In October 2018 and December 2018, four additional groundwater monitoring wells were installed downgradient of the LRCP to gather additional data about where contamination had migrated beyond the downgradient waste unit boundary. EPA believes that additional wells may be needed to laterally characterize the nature and extent of the release, particularly because monitoring well CF-19-14 does not seem to be downgradient from the release. Two wells were installed in the shallow aquifer, CF-19-14 and CF-19-15, and two wells were installed in the deeper aquifer, CF-19-08D and CF-19-15D.[25] These wells were first sampled for groundwater quality in March 2019. Also, in March 2019, groundwater elevation measurements were taken at a subset of wells at the facility, all located south of the LRCP. Because groundwater can flow in multiple directions around the unit, the limited number of groundwater elevation measurements resulted in a limited understanding of groundwater flow direction. EPA is proposing to determine that the groundwater flow characterization does not support the conclusion that CF-19-14 is downgradient of CF-19-08, where the molybdenum SSLs were detected. Therefore, EPA believes that CF-19-14 may not be an appropriate well to laterally characterize the nature and extent of the release, in accordance with 40 C.F.R. § 257.95(g)(1).

Section 7.1 of the ACM identified several gaps in data needed to assess corrective measures: 1) development of a model to assess natural attenuation after closure of the LRCP, 2) ongoing sampling to evaluate trends in molybdenum concentrations to support the modeling effort, 3) additional hydraulic testing to support the modeling effort, and 4) additional

[25] 2020 Annual GWMCA Report Figure 1.

groundwater elevation measurements to support the modeling effort. IKEC has not provided any explanation why these data are needed to select a remedy. However, the data gaps identified appear to focus only on data to conduct groundwater modeling to analyze potential impacts of LRCP closure (i.e., source control) on groundwater concentrations and attenuation of molybdenum (i.e., the facility's preferred remedy, monitored natural attenuation (MNA)). Specifically, these data would focus solely on contaminant concentrations and whether the contaminant plume is stable.

Plume stability is one aspect of the characterization of the nature and extent of the release; it may occur due to dilution and dispersion or it may be due to an attenuation mechanism such as immobilization. No additional geochemical data or data on the presence of chemical states of molybdenum within the aquifer matrix are included in the data gaps identified. These additional chemical data are needed to assess immobilization attenuation mechanisms. Without the chemical data, the primary reason to study plume stabilization would be to assess MNA through dilution and dispersion. As discussed below, MNA through dilution and dispersion does not meet the requirements in 40 C.F.R. § 257.97(b)(4) and is not appropriate for consideration as a primary corrective measure.

Table 6-2 in the ACM indicates that bench-scale treatability testing was needed to fully evaluate certain corrective measures for molybdenum. It is not explained why the bench scale treatability testing could not have been completed and the results included in the ACM. Additionally, no progress on this study is indicated in a Semi-Annual Remedy Selection Progress Report. EPA is proposing to determine that failure to conduct the bench-scale treatability test is a failure to comply with the requirement in 40 CFR § 257.95(g)(1) to characterize the release and

site conditions sufficiently "to support a complete and accurate assessment of the corrective measures that may affect the remedy ultimately selected."

(b) Assessment of Corrective Measures

An assessment of corrective measures that will "prevent further releases, remediate any releases, and restore affected areas to original conditions" is required. 40 C.F.R. § 257.96. Section 257.96(c) requires an analysis of the effectiveness of potential corrective measures at meeting all requirements and objectives of the remedy required by 40 C.F.R. § 257.97, and that the analysis address at least the criteria listed in 40 C.F.R. § 257.96(c)(1) through (c)(3).

The ACM contains an assessment of the effectiveness of control measures in the narrative in section 6.4. High-level conclusions of the assessment are presented for source control measures in Table 6-1 and for groundwater control measures in Table 6-2. EPA is proposing to determine the ACM does not satisfy the requirements of 40 C.F.R. § 257.96.

The ACM contains conclusions about certain control measures without providing discussion or data to support the conclusions. Some control measures are included that fail to meet other requirements of the CCR Regulations (e.g., closure performance standard in 40 C.F.R. § 257.102(d)(3)), making their inclusion inappropriate. Additionally, some assessments do not seem to accurately reflect the control measure's "effectiveness in meeting all of the requirements and objectives" in 40 CFR § 257.97(b) based on discussions elsewhere in the ACM. IKEC dismisses a number of potential remedies in Table 6-2, but the conclusions in the table are not supported with data or analysis in either the table or the narrative of the report. Finally, there are several internal inconsistencies in the ACM.

Conclusions without a supporting assessment or data do not constitute "an analysis of the effectiveness of potential control measures." Further, inaccurate assessments in an ACM can ultimately result in selection of a remedy that will not meet the requirements of 40 C.F.R. § 257.97(b).

(i) Assessment of Source Control Corrective Measures

Among other things, remedies must control the source of releases to reduce or eliminate, to the maximum extent feasible, further releases of Appendix IV constituents. 40 C.F.R. § 257.97(b)(3). Three alternatives to achieve this source control are considered in the ACM: dewatering of the pond, an engineered cover system, and excavation of ash. See Table 6-1. Alternative 1 – dewatering the pond – is a necessary step that must be taken to implement either alternative 2 or 3 and should have been included as an element of those alternatives. It does not independently meet the closure requirements for a surface impoundment closing with waste in place in 40 CFR § 257.102(d)(3). Because there is no way for IKEC to comply with the closure requirements in 40 C.F.R. § 257.102 and dewater the pond without then continuing to close the unit by installing an engineered cover system or excavating the ash from the pond, source control Alternative 1 should not have been included in the assessment as an independent source control measure.

(ii) Assessment of Groundwater Control Measures

To meet the requirement in 40 CFR § 257.96(c), the ACM identified the following corrective measures to address molybdenum in groundwater: 1) three in-situ treatment measures (groundwater migration barriers; permeable reactive barriers (PRBs); in-situ chemical stabilization); 2) ex-situ groundwater treatment (pump and treat) through a vertical well system,

horizontal well system, or a trenching system (treatment technologies considered to be used in conjunction with an ex-situ system were filtration, ion exchange, and adsorbents); and 3) MNA. The technologies are listed in Table 6-2 and are discussed in section 6.4 of the narrative. EPA has preliminarily identified significant noncompliance issues with the assessment of each of these measures.

(A) In-Situ Treatment (migration barriers, PRBs, in-situ chemical stabilization)

Section 6.4.1.1 of the ACM presents conclusions on the performance of multiple in-situ control measures in general terms, without any supporting explanation: "Although migration barriers, PRBs, and in-situ chemical stabilization are proven technologies, conditions at the LRCP would limit the performance of each of these approaches."[26] The potential effectiveness of migration barriers is described as viable, but it is noted that performance could be impacted by periodic flooding from the Ohio River. In Table 6-2 of the ACM, performance of the in-situ measures is assessed as "low" and for MNA it is assessed as "high." Section 6.4.1.1 states that periodic flooding could impact any in-situ technology considered but does not cite impacts of flooding on MNA or explain why the performance of MNA would not be impacted.

Reliability (one of the required factors in 40 CFR § 257.96(c)) is assessed in section 6.4.2.1. This section notes that PRBs are typically a reliable technology but concludes that reliability is only "medium," because maintaining adequate reagent concentrations at depth over time in PRBs is challenging. In essence, IKEC has downgraded the reliability of this technology based on factors that are not appropriately considered under this criterion.

[26] ACM, p. 17

The requirement is to assess the reliability inherent to the technology itself and to consider site-specific circumstances that affect that reliability. 40 C.F.R. § 257.96(c)(1). Any active treatment technology could perform poorly with inadequate maintenance or poor design. Any identified, credible reliability issues should be based on site-specific circumstances that present particular challenges that would hamper proper design and implementation and affect reliability (e.g., fluctuations in groundwater flow direction or lack of accessible confining layer into which to tie the PRBs). No such site-specific circumstances are discussed. This lack of explanation does not comply with 40 C.F.R. § 257.96(c), which specifies that the assessment of control measures "must include an *analysis* of the effectiveness of potential corrective measures" (emphasis added) according to the listed criteria. Mere unsupported conclusions cannot meet this standard.

The ease of implementation (another required criterion in 40 C.F.R. § 257.96(c)) of all three of the in-situ groundwater remedial technologies is assessed together as "low" in section 6.4.3.1. The assessment is that they would be difficult "due to the significant amount of time, effort and disturbance required at the LRCP…" While one site-specific issue (construction to the 40-foot depth to a confining layer) supports the low assessment for migration barriers and PRBs, no site-specific factors are discussed for in-situ chemical stabilization. The ACM does not explain why any particularly difficult construction would be required for in-situ chemical stabilization and provides no other explanation for its low assessment. The last sentence of this section notes that ease of implementation may "…require less time and effort…" for in-situ chemical stabilization than for a migration barrier or PRBs. However, this conflicts with the conclusions in Table 6-2, which assesses those three technologies equally with respect to ease of implementation (i.e., low).

EPA expects that an assessment of ease of implementation will include discussion of site-specific circumstances that may impact the ability to implement the remedy, rather than the time and effort required to do so, which seem to amount to consideration of cost (except for time discussed in the context of 40 C.F.R 40 § 257.96(c)(2)). As an example, the ability to implement a corrective measure could be affected by topographic features (e.g., a forest or a wetland) that would preclude or make difficult proper placement of injection wells needed for in-situ chemical stabilization. The ACM failed to provide this supporting analysis.

(B) Ex-situ Treatment

The assessment of ex-situ treatment alternatives to address groundwater contamination also lacks any supporting detail and analysis. Section 6.4.1.2 of the ACM assesses ex-situ groundwater treatment with extraction through vertical wells most favorably of any ex-situ control measure, and of any groundwater control measure. EPA's review identified some logical inconsistencies, although each criterion in 40 C.F.R. § 257.96(c) was included.

In section 6.4.1.2, the ACM states that iron content in the groundwater would affect the performance of either horizontal or vertical extraction wells, but no data on iron content of groundwater at the site is cited or otherwise provided.

The ACM also inaccurately concludes the expected performance of trench systems is "high." This is not supported by the data in the ACM, because trenches are most often used in a shallow unit. The aquifer at issue is between 15 to 40 feet below ground surface (bgs), which represents the practical limitation of the depth at which trenching systems can be used to extract groundwater. The assessment of the performance of trenching systems as high is also

inconsistent with section 6.4.1.2, which states that, "Although these depths are not ideal for a trench, they do not preclude the use of a trench at the LRCP."

In section 6.4.5.2, the potential for cross-media impacts from ex-situ groundwater corrective measures is assessed with just the following sentence: "Well and trench systems pose a moderate risk of cross-media impacts." No additional discussion or information is provided. In addition to lacking supporting data and analysis, the conclusion of the assessment (i.e., "medium," in Table 6-2) is inconsistent with the assessment's conclusion that the risk of cross-media impacts from MNA is low, because the cross-media impacts from MNA are expected to be significantly greater than those from ex-situ treatment of groundwater. As discussed later in this document, the only mechanism identified for MNA at this site is dispersion and dilution; in essence, this amounts to cross-media transfer of contamination from groundwater to surface water at this location.

(C) Monitored Natural Attenuation (MNA)

MNA refers to reliance on natural attenuation processes to achieve corrective action objectives within a time frame that is reasonable compared to that offered by other, more active methods. The "natural attenuation processes" at work in such a remediation approach generally include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater.[27]

EPA is proposing to determine that MNA in the ACM fails to meet the requirements of 40 C.F.R. § 257.97. Specifically, MNA through dispersion and dilution as a primary mechanism

[27] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 3

at this site fails to be protective of human health and the environment and remove from the environment as much of the released contaminated material as feasible as required under 40 C.F.R. §§ 257.97(b)(1) and (4). Additionally, the assessment of MNA is skewed because IKEC considered different MNA mechanisms under each 40 C.F.R. § 257.96(c) criterion, only considering the highest performing mechanism, even in cases where there was no evidence the mechanism could occur at the site. Finally, the ACM contains no data to support the occurrence of immobilization of molybdenum at Clifty Creek.

(1) MNA Guidance in other EPA cleanup programs

EPA has extensive experience with MNA in environmental cleanup programs. Based on that experience, EPA considers the scientific principles of chemical and physical behavior of constituents in such guidance to be relevant to corrective action at CCR units. EPA believes that the 2015 "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites" ("2015 MNA Guidance") contains relevant information, because the regulated constituents are inorganic contaminants and the focus of the CCR corrective action program is on groundwater cleanup. While scientific aspects of the 2015 MNA Guidance (e.g., the behavior of inorganic contaminants in the environment or the ways in which specific MNA mechanisms work) are relevant, EPA acknowledges that policy aspects of the 2015 MNA Guidance may not be relevant. As an example, using a step-by-step tiered analysis approach to screen sites for MNA for the purposes of cost-effectiveness[28] would be inappropriate[29] for CCR corrective action given the prohibition against consideration of costs and the deadline in 40 CFR § 257.96(a) to complete the ACM.

[28] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, pp. 4-5
[29] USWAG decision, section IV.B.4

Mass reduction through degradation generally is not a viable process for most inorganic contaminants in groundwater, except for radioactive decay. Constituents in Appendix IV to 40 C.F.R. part 257 are atoms, and atoms do not break down or degrade through any naturally occurring process unless they are radioactive. Thus, while MNA can reduce the concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils, it does not remove the contaminants from the environment. MNA, therefore, would not perform well with respect to the requirement in 40 C.F.R. § 257.97(b)(4), which requires that remedies "remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible."

Inorganic contaminants persist in the subsurface because, except for radioactive decay, they are not degraded by the other natural attenuation processes.[30] Often, however, inorganic contaminants may exist in forms that have low mobility, toxicity, or bioavailability such that they pose a relatively low level of risk. Therefore, natural attenuation of inorganic contaminants is most applicable to sites where immobilization is demonstrated to be in effect and the process/mechanism is irreversible.[31] Immobilization that is not permanent would require ongoing monitoring in accordance with 40 C.F.R. § 257.98(a)(1) as long as immobilized constituents remain in the aquifer matrix.

Dilution and dispersion reduce concentrations through dispersal of contaminant mass rather than destruction or immobilization of contaminant mass.[32] Consequently, these

---

[30] This is in contrast to organic compounds, comprised of multiple elements, which may react or degrade to their constituent elements or form other, less harmful compounds.
[31] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 9
[32] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14

mechanisms do not meet the requirement at 40 C.F.R. § 257.97(b)(4) to remove from the environment as much of the contaminated material as is feasible, and they may not meet the requirement at 40 C.F.R. § 257.97(b)(1) to be protective of human health and the environment. Note that this is also consistent with EPA's long-standing policy that dilution and dispersion are generally not appropriate as primary MNA mechanisms.[33]

In order to conduct the assessment required by 40 C.F.R. § 257.96(c), evaluation of MNA as a corrective measure requires analysis of site-specific data and characteristics that control and sustain naturally occurring attenuation. "It is necessary to know what specific mechanism (e.g., what type of sorption or reduction and oxidation reaction) is responsible for the attenuation of inorganics so that the stability of the mechanism can be evaluated. [...] Changes in a contaminant's concentration, pH, oxidation and reduction potential (ORP), and chemical speciation may reduce a contaminant's stability at a site and release it into the environment."[34] Determining the existence, and demonstrating the irreversibility, of MNA mechanisms is necessary to evaluate the performance, reliability, ease of implementation, and the time required to begin and complete the remedy. 40 C.F.R. §§ 257.96 (c)(1) and (c)(2). This information would ultimately be necessary to show that MNA meets the requirements of 40 C.F.R. § 257.97(b).

(2) Assessment of MNA in the ACM

The ACM has conflated the assessment of MNA through dilution and dispersion with MNA through immobilization. While MNA through dilution and dispersion performs well with respect to certain criteria (e.g., reliability), it fails to perform well according to other criteria

[33] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14
[34] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 8

(e.g., cross-media impacts) or to remove sufficient contaminated material from the environment as required under 40 C.F.R. § 257.97(b)(4). Consequently, its consideration as a primary remedy is inappropriate. By contrast, MNA through immobilization may be assessed favorably with respect to some criteria (e.g., ease of implementation), but the ACM provides no evidence this mechanism is occurring at this site for molybdenum. In the absence of such data, MNA through immobilization should necessarily be assessed poorly with respect to other criteria (e.g., performance, reliability). By considering the mechanism that assesses higher under each criterion, the ACM has skewed the assessment of MNA more favorably than is allowed by the regulation and supported by site-specific data.

Section 6.4.1.1 of the ACM assesses the performance of MNA. The ACM identifies three MNA mechanisms that could affect molybdenum (adsorption, precipitation, and dispersion). The ACM presents limited data obtained from three wells during 2018 for pH and ORP, which impact the likelihood of inorganic metals to precipitate and absorb or adsorb onto subsurface soils. The data indicate that, during 2018, pH at these wells was relatively stable (6.5 to 7.5 standard units), which would only weakly support adsorption/precipitation, and that ORP varied (-50.4 mV to 335 mV), which indicates fluctuation in favorability of MNA. The pH data gathered at other wells and during other detection and assessment monitoring events are not included in the discussion. The ACM states that dispersion would likely be a major factor in MNA, given periodic flood events and groundwater flow reversals.

MNA is assessed in section 6.4.2.1 as reliable, and the reason provided is that MNA relies on natural processes. This is not a logical conclusion, because when natural conditions vary, natural processes vary. This is acknowledged in the same paragraph, when it is noted that geochemical changes in the groundwater may affect the performance of MNA. "Geochemical

changes in groundwater could significantly impact the effectiveness of MNA, which could lead to the need to implement other remedial measures at the LRCP."[35] Geochemical changes have been documented, specifically ORP varied (-50.4 mV to 335 mV) during 2018 at the three wells. Therefore, assessment of MNA through adsorption or precipitation mechanisms as reliable is inconsistent with the site-specific data.

MNA through dispersion or dilution can be reliable, but it should not have been assessed favorably with respect to performance at achieving requirements in 40 C.F.R. § 257.97(b). As noted above, the constituents in Appendix IV to part 257 (i.e., molybdenum) are atoms, and atoms do not degrade in nature. Dispersion or dilution serves to expand the area of contamination, albeit at lower concentrations. This spread of groundwater contamination is precisely the type of environmental impact the CCR corrective action program was developed to address. Because dilution and dispersion do not degrade the contaminants or change them to a less toxic form and do not remove them from the environment, MNA through dilution and dispersion fails to comply with 40 C.F.R. § 257.97(b)(4) and may not be protective of human health and the environment as required by 40 C.F.R. § 257.97(b)(1).

The ease of implementation of MNA is assessed in section 6.4.3.1 as the easiest of all the technologies, primarily because IKEC believes there is a sufficient number of monitoring wells at the LRCP. While MNA is a relatively easy remedy to implement, EPA is proposing to conclude that the existing well network is insufficient to monitor performance of an MNA remedy. If MNA were to be selected as part of a remedy, monitoring groundwater chemistry throughout the plume where attenuation is occurring would be required to comply with 40 C.F.R.

[35] ACM p. 19

§ 257.98(a)(1). See also the 2015 MNA guidance.[36] The four additional wells installed in 2018 do not provide a sufficient system to laterally and vertically determine the extent of the plume, nor to monitor within the plume the variations in geochemistry noted throughout the ACM that may impact the effectiveness of attenuation processes. Additional wells would be required, particularly wells that are screened deeper in the aquifer at CF-15-09 and placed laterally between CF-19-14 and CF-19-15.

Section 6.4.5.1 states that "MNA poses no significant cross-media impact potential," and Table 6-2 therefore assesses the cross-media impacts of MNA as low. These conclusions are contradicted by other statements in the ACM, including the statement in section 6.4.1.1 that dispersion would likely be a major factor in MNA. Dispersion at the site results in migration of contamination in groundwater to the Ohio River (surface water). Impacts from groundwater to surface water are cross-media impacts[37] and MNA through dispersion has the highest cross-media impact of all groundwater corrective measures considered.

40 C.F.R. § 257.96(c)(1) also requires assessment of how well control measures will control exposure to residual contamination. Instead, the ACM assesses potential impacts from exposure to residual contamination. See Table 6-2 and section 6.4.6.1, where MNA is assessed as low. This conclusion is unsupported by data or analysis.

EPA is proposing to conclude that IKEC has failed to demonstrate that the facility is in compliance with the requirements of 40 C.F.R. § 257.96 to complete an ACM for the units in the multiunit groundwater monitoring system. This finding is primarily based upon failure to assess

[36] 2015 MNA Guidance p.33
[37] "Municipal Solid Waste Landfill Criteria–Technical Manual: Chapter 5, Subpart E–Ground-Water Monitoring and Corrective Action," p. 296

corrective measures in compliance with the required criteria in 40 C.F.R. § 257.96(c) using site-specific data gathered in the characterization required by 40 C.F.R. § 257.95(g)(1).

(iii) Failure to select a remedy as soon as feasible

EPA is proposing to determine that IKEC has not selected a remedy as soon as feasible, as required by 40 C.F.R. § 257.97(a). First, although EPA disagrees that the data identified in section 7.1 of the ACM are necessary prerequisites to selection of a remedy, and that the data identified in table 6-2 of the ACM could not have been gathered prior to completion of the ACM, the more relevant point is that IKEC appears to have made no attempt to gather these data because the ACM was completed in September 2019. Second, because the ACM identified corrective measures that would meet the standards in 40 C.F.R. § 257.97(b), it was feasible to select a remedy as soon as December 2019. Finally, IKEC has stated an intention to delay selection of a remedy until after closure of the LRCP, which is inconsistent with 40 C.F.R. § 257.97(a).

The CCR regulations require that a facility must select a remedy that is based on the results of the ACM and that meets the standards in 40 C.F.R. § 257.97(b) "as soon as feasible." 40 C.F.R. § 257.97(a). The regulations applicable to corrective action establish a series of time frames that typically operate consecutively. Relevant here, once corrective action is triggered a facility has 180 days to complete the ACM.[38] At that point the obligation to select a remedy is triggered.[39] See, 40 C.F.R. §§ 257.95(g), 257.96(a), 257.97(a). In other words, once the 180 days to complete the ACM have passed, a facility must select a remedy "as soon as feasible." As

[38] 40 C.F.R. § 257.96(a) allows for a demonstration that additional time is needed, up to 60 days, to complete the ACM.
[39] The remedy selection process begins with a public meeting to discuss findings of the ACM and at least 30 days to address public input received, in accordance with 40 C.F.R. § 257.96(e).

previously explained, EPA interprets the term "feasible" to mean ''capable of being done or carried out'' (Merriam website (https://www.merriam-webster.com/dictionary/feasible)) and ''possible to do and likely to be successful'' (Cambridge English Dictionary https://dictionary.cambridge.org/us/dictionary/english/feasible)). 85 Fed Reg. 53542. As a practical matter, this means that a facility must be able to show progress toward selecting a remedy once the 180 days have passed or demonstrate why it was not feasible to have done so. Based on the documentation provided, EPA is proposing to determine that it was feasible to have selected a remedy that met the standards in 40 C.F.R. § 257.97(b) as early as December 2019 and that IKEC failed to comply with this requirement.

The Demonstration states that the ACM was completed in September 2019. A public meeting to discuss the contents of the ACM in accordance with 40 C.F.R § 257.96(e) was held in November 2019.[40] As of November 30, 2020, IKEC still had not selected a remedy.

Section 7.1 of the ACM identified several data gaps: 1) development of a model to assess natural attenuation after closure of the LRCP, 2) ongoing sampling to evaluate trends in molybdenum concentrations to support the modeling effort, 3) additional hydraulic testing to support the modeling effort, and 4) additional groundwater elevation measurements to support the modeling effort. IKEC has not provided any explanation why these data are needed to select a remedy. As discussed previously, the data gaps identified in section 7.1 seem to focus on data to further assess MNA after closure of the LRCP, specifically MNA through dispersion. MNA through dispersion does not comply with the requirements in 40 C.F.R. § 257.97(b)(4), and it may not comply with requirements in 40 C.F.R. § 257.97(b)(1). Because MNA through

[40] Demonstration p. 3-3

dispersion is not a compliant, primary remedy, EPA believes it was feasible to select a remedy prior to gathering the data identified in section 7.1 of the ACM.

An additional data gap was identified in Table 6-2 in the ACM, bench-scale treatability testing for molybdenum. The ACM indicates that study was needed to fully evaluate certain corrective measures for molybdenum. However, as stated previously, EPA believes this information was required in the ACM itself and should not have resulted in additional time to select a remedy.

Of greater significance, however, IKEC has presented no evidence of any progress toward collecting any of these data. This is confirmed by the June 2020 Semi-Annual Remedy Selection Progress Report, which reports no progress in collecting these data and instead discusses continued assessment monitoring and continued efforts to plan closure of the LRCP. These activities are not necessary prerequisites to selecting a remedy and do not otherwise demonstrate progress toward remedy selection. Neither the Demonstration nor the 2019 Annual GWMCA Report describes any additional work, such as work to characterize site conditions that could ultimately affect a remedy, that would indicate any progress toward selecting a remedy. According to the June 2020 Semi-Annual Remedy Selection Progress Report, no progress toward selection of a remedy was reported.

Although, as discussed in the previous section, much of the analysis in the ACM was inappropriately skewed in favor of MNA, the ACM nevertheless identified corrective measures that could meet all the standards in 40 C.F.R. § 257.97(b). These include, for example, excavation of ash and ex-situ treatment of groundwater. It is not apparent why it was not "feasible" for IKEC to select one or more of these measures as a remedy. Moreover, given the existence of these measures, 40 C.F.R. § 257.97(a) does not allow IKEC to delay selection of a

remedy under the guise of collecting additional data that are not needed to select a remedy. This is particularly true when the focus of additional data collection is to study a remedy (MNA through dilution and dispersion). As EPA has explained above, as a primary remedy at this site, MNA through dilution and dispersion does not meet certain requirements under 40 C.F.R. § 257.97(b).

Finally, statements in section 6.3 of the ACM appear to indicate that IKEC intends to delay remedy selection and implementation of corrective action until after closure of the LRCP,

> "...groundwater quality near the LRCP is anticipated to significantly improve over time as a result of planned closure activities. Therefore, a flexible and adaptive approach to groundwater remediation that begins with post-closure groundwater monitoring at the unit is planned. During the post-closure monitoring period, the positive impacts of closure and the effects of natural attenuation on groundwater quality will be fully evaluated. The need for more active remedial measures (as discussed below) will be determined after sufficient post-closure groundwater quality data has been collected and evaluated."

This intention is confirmed in the June 2020 Semi-Annual Remedy Selection Progress Report, which seems to inappropriately indicate progress toward closure is progress toward remedy selection:

> "The initial closure methods described above will reduce the potential for releases and migration of CCR constituents. Groundwater assessment monitoring as required by 40 C.F.R. § 257.96(b) will continue until a remedy is selected and implemented. The monitoring will be conducted to track changes in groundwater conditions as a result of these closures and operational changes. These data will also be considered in the selection and design of a remedy in accordance with 40 C.F.R. § 257.97."[41]

Closure of a CCR unit is not progress toward selection of a remedy. Delaying remedy selection until after closure of the LRCP does not comply the requirement to select a remedy "as soon as feasible." 40 C.F.R. § 257.97(a).

[41] Semi-Annual Selection of Remedy Progress Report, June 2020, Section 4.1.

IV. Proposed Date to Cease Receipt of Waste

EPA is proposing that IKEC must cease receipt of waste within 135 days of the date of the Agency's final decision (i.e., the date on which the decision is signed). EPA is further proposing that, under certain circumstances described below, EPA could authorize additional time for IKEC to continue to use the impoundments to the extent necessary to address demonstrated grid reliability issues, if any, provided that IKEC submits a planned outage request to PJM within 15 days of the date of EPA's final decision and IKEC provides the PJM determination disapproving the planned outage and the formal reliability assessment upon which it is based to EPA within 10 days of receiving them.

The regulations state that, when EPA denies an application for an extension, the final decision will include the facility's deadline to cease receipt of waste, but they do not provide direction on what the new deadline should be. 40 C.F.R. § 257.103(f)(3). EPA is proposing to set a new deadline for IKEC to cease receipt of waste that would be 135 days from the date of the final decision on IKEC's Demonstration. This would provide IKEC with the same amount of time that would have been available to the facility had EPA issued a denial immediately upon receipt of the Demonstration (i.e., from November 30, 2020, when EPA received the submission, to April 11, 2021, the regulatory deadline to cease receipt of waste). This amount of time thus puts the facility in the same place it would have been had EPA immediately acted on the Demonstration and therefore adequately accounts for any equitable reliance interest IKEC may have had after submitting its Demonstration. Moreover, as discussed further below, this date should provide IKEC with adequate time to coordinate with and obtain any necessary approvals from PJM for any outage of the coal-fired boiler that may be necessary. This proposed deadline

for IKEC to cease receipt of waste is the same as the proposed effective date of EPA's final decision (*see* Unit VI below).

Given that this proposed deadline (135 days from the date of EPA's final decision) is sooner than the deadline requested by IKEC, EPA understands that it is likely that the coal-fired boilers associated with the CCR units will temporarily need to stop producing waste (and therefore power) until either construction of the alternative disposal capacities is completed and commercially operational or some other arrangements are made to manage its CCR and/or non-CCR wastestreams. *See* discussion of adverse effects above in Unit III.B. In IKEC's Demonstration it noted that if the requested deadline were not granted, it "might" affect the reliability of the electricity grid. IKEC provided no information or evidence to support this statement. EPA does not have independent evidence showing that the temporary outage of the coal-fired boiler at this facility would affect the reliability of the grid.

This facility operates as part of the PJM system, which is the largest competitive market for electric power in the United States. PJM is an RTO that is part of the Eastern Interconnection grid. PJM currently has a significant amount of excess generating capacity, and consequently, a relatively large reserve margin. A reserve margin is a measure of the system's generating capability above the amount required to meet the system's peak load.[42] PJM's target reserve margin[43] for the region is now 14.7%.[44] PJM's actual reserve margin in 2018 was more than

[42] Reserve margin is defined as the difference between total dependable capacity and annual system peak load (net internal demand) divided by annual system peak load.
[43] The target reserve margin, also known as the Installed Reserve Margin, is "the percent of aggregate generating unit capability above the forecasted peak load that is required for adherence to meet a given adequacy level." Page 52, https://www.pjm.com/-/media/committees-groups/committees/mc/2020/20201119/20201119-cac-2-2020-installed-reserve-margin-study-results-report.ashx.
[44] North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 44 (where "Reference" Reserve Margin Level refers to PJM's Installed Reserve Margin), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.

twice that, at 32.8%; in 2019 it was 29%. The anticipated reserve margin for 2021 is projected to be almost 34%.

The significant exceedance of PJM's existing target reserve margin, combined with scheduled new capacity coming online into the market, suggests that the temporary outage at Clifty Creek would not adversely affect resource adequacy requirements. EPA also has not seen any information to indicate that an extended planned outage at Clifty Creek would trigger local reliability violations.[45] Additionally, especially with the advance notice, there are a wide array of tools available to utilities, system operators, and State and Federal regulators to address situations where the outage of a generating unit might otherwise affect local electric reliability conditions.

Nonetheless, EPA is sensitive to the importance of maintaining enough electricity generating capacity to meet the region's energy needs, including meeting specific, localized issues. EPA understands that it is possible that in some instances temporarily taking generating units (including coal-fired units) offline could have an adverse, localized impact on electric reliability (e.g., voltage support, local resource adequacy), although IKEC has presented no evidence that such is the case with this facility.

If a generating asset were needed for local reliability requirements, the grid operator (e.g., PJM) might not approve a request for a planned outage. In such instances, the owners/operators of the generating unit could find themselves in the position of either operating in noncompliance with RCRA or halting operations and thereby potentially causing adverse reliability conditions.

[45] A local reliability violation might occur, for example, if transmission line constraints limit the amount of power that can get to an area from plants outside that area.

EPA is obligated to ensure compliance with RCRA to protect human health and the environment. Where there is a conflict between timely compliance and electric reliability, EPA intends to carefully exercise its authorities to ensure compliance with RCRA while taking into account any genuine, demonstrated risks to grid reliability identified through the process established by PJM that governs owner/operator requests for planned outages and/or deactivation.[46]

Accordingly, EPA is proposing to rely on established processes and authorities used by PJM to determine whether a planned outage necessary to meet the new deadline would cause a demonstrated grid reliability issue.

PJM is responsible for coordinating and approving requests for planned outages of generation and transmission facilities, as necessary, for the reliable operation of the PJM RTO.[47] In PJM, power plants are to submit a request at least 30 days in advance of a planned outage to allow PJM to evaluate whether the resource is needed to maintain grid reliability. PJM will grant the request unless it determines that the planned outage would adversely affect reliability.

If PJM approves a planned outage request, the outage may proceed and there would be no reason to expect that the outage would affect reliability. However, if PJM disapproves a planned outage, the procedure is for the PJM member to submit a new planned outage request for PJM to evaluate (with potential proposals to mitigate previously indicated reliability violations with the prior request). This process is repeated until the generating facility submits an acceptable request. The PJM member may also request PJM's assistance in scheduling a planned outage.

[46] *See, e.g.*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at https://www.pjm.com/~/media/documents/manuals/m10.ashx.
[47] *See*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at https://www.pjm.com/~/media/documents/manuals/m10.ashx.

PJM may rely on different bases in determining whether to deny a request for a planned outage. For example, a denial may be issued because of timing considerations taking into account previously approved planned outage requests, in which case the EPA would expect the plant owner to work with PJM to plan an outage schedule that can be approved by PJM and also satisfies the plant owner's RCRA obligations, without regard to any cost implications (e.g., in meeting any contractual obligations with third parties) that may result for the plant owner under a revised proposed outage schedule.

Alternatively, however, in some cases, PJM might deny a request should it determine that the planned outage could not occur without triggering operational reliability violations. In such cases, the system operator might determine that the generating unit would need to remain in operation until remedies are implemented. As set forth above, IKEC has presented no evidence that such is the case with this facility.

For Clifty Creek, EPA is proposing to rely on PJM's procedures for reviewing planned maintenance outage and similar requests. Accordingly, EPA is proposing that, if PJM approves IKEC's planned outage request, EPA would not grant any further extension of the deadline to cease receipt of waste (i.e., the deadline would be 135 days from the date of EPA's final decision). If, however, PJM disapproves IKEC's planned outage request based on a technical demonstration of operational reliability issues, EPA is proposing that, based on its review of that disapproval and its bases, EPA could grant a further extension (i.e., beyond 135 days from the date of EPA's final decision). EPA is further proposing that such a request could only be granted if it were supported by the results of the formal reliability assessment(s) conducted by PJM that established that the temporary outage of the boiler during the period needed to complete construction of alternative disposal capacity would have an adverse impact on reliability. In such

a case EPA is proposing that, without additional notice and comment, it could authorize continued use of the impoundments for either the amount of time provided in an alternative schedule proposed by PJM or the amount of time EPA determines is needed to complete construction of alternative disposal capacity based on its review of the Demonstration, whichever is shorter. EPA is further proposing that a disapproval from PJM without a finding of technical infeasibility for demonstrated reliability concerns would not support EPA's approval of an extension of the date to cease receipt of waste because any concern about outage schedules and their implications for plant economics could be resolved without an extension of RCRA compliance deadlines (e.g., through provision of replacement power and/or capacity; rearranging plant maintenance schedules; reconfiguration of equipment).

To obtain an extension, EPA is proposing that IKEC must submit a request for an outage to PJM within 15 days of the date of EPA's final decision. To avoid the need for serial requests and submissions to PJM, EPA is proposing to require IKEC to contact PJM and request assistance in scheduling the planned outage so that IKEC and PJM can determine the shortest period of time during an overall planned outage period in which the generating unit must be online to avoid a reliability violation. EPA expects that IKEC and PJM would plan the outage(s) and return-to-service periods – and any other needed accommodations – in ways that minimize the period of actual plant operations.

Finally, to obtain an extension from EPA, IKEC must submit a copy of the request to PJM and the PJM determination (including the formal reliability assessment) to EPA within 10 days of receiving the response from PJM. EPA would review the request and, without further notice and comment, issue a decision.

One hundred and thirty-five days should normally provide adequate time to obtain a decision from PJM. According to the PJM Manual 10 (at page 17), the normal process for obtaining approval for a planned outage is 30 days. One hundred and thirty-five days should also provide sufficient time to accommodate multiple requests, if necessary, to obtain approval. However, EPA solicits comment on whether 135 days from the date of the final decision provides sufficient time to accommodate the normal process of obtaining approval for a planned outage.

V. Conclusion

In conclusion, EPA is proposing to deny IKEC's request for an alternative cease receipt of waste date for the CCR surface impoundments, WBSP and LRCP, located at the Clifty Creek Power Station in Madison, Indiana. EPA is proposing that IKEC cease receipt of waste and initiate closure no than 135 days from the date of EPA's final decision.

EPA is proposing to deny IKEC's extension request based on its proposed determination that Clifty Creek Power Station has failed to demonstrate that the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. § 257.103(f)(1)(iii). Based on the information provided, it appears that the closure of both the WBSP and the LRCP does not meet the technical requirements of 40 C.F.R. § 257.102(d). Additionally, EPA has preliminarily identified concerns that the groundwater monitoring networks for both the WBSP and the LRCP fail to meet the standards found in 40 C.F.R. §§ 257.90 and 257.91, particularly the standards with respect to the placement of background wells. Lastly, EPA has identified several concerns with the ongoing corrective action activities at the LRCP.

Finally, due to the nature of the noncompliance EPA has preliminarily identified at Clifty Creek, EPA is proposing to issue a denial rather than a conditional approval. As discussed in greater detail in the proposed H.L. Spurlock Power Station decision, EPA is proposing that a conditional approval may be appropriate in situations where the actions necessary to bring the facility into compliance are straightforward and the facility could take the actions well before its requested deadline (or the alternative deadline that EPA has determined to be warranted). But in the case of Clifty Creek, the noncompliance EPA has identified involves more complicated technical issues, where the specific actions necessary to come into compliance cannot be easily identified and/or cannot be implemented quickly. As discussed previously EPA is proposing to determine that a significant component of the alternative disposal capacity IKEC intends to construct is out of compliance with several regulatory provisions, including the groundwater monitoring and closure requirements. Although EPA has preliminarily identified options that would be consistent with the regulations (see Section III. E. 1. b), EPA cannot determine precisely how those options might function with all of the other components of the alternative disposal system or even whether they are genuinely feasible in light of site conditions. Nor could EPA conclude that IKEC could come into compliance with all the groundwater monitoring and corrective action requirements before its requested deadline. Moreover, EPA continues to believe that where there is affirmative evidence of harm at the site, such as where a facility has delayed corrective action, EPA cannot grant additional time for the impoundment to operate without some evidence that these risks are mitigated.

VI. Effective Date

EPA is proposing to establish an effective date for the final decision on IKEC's demonstration of 135 days after the date of the final decision (i.e., the date that the final decision

is signed). EPA is proposing to align the effective date with the new deadline that EPA is proposing to establish for IKEC to cease receipt of waste. EPA is doing so for all of the reasons discussed as the basis for proposing to establish the new cease receipt of waste discussed in Section IV of this document.

January 11, 2022
Date

Barry N. Breen
Acting Assistant Administrator

Attachment I

PROPOSED DECISION

Proposed Denial of Alternative Closure Deadline for Ottumwa Generating Station

SUMMARY:

The Environmental Protection Agency (EPA) is proposing to deny the Demonstration submitted by Interstate Power and Light Company (IPL), for a coal combustion residuals (CCR) surface impoundment, the Ottumwa Generating Station (OGS) Ash Pond, located at the OGS near Ottumwa, Iowa. IPL submitted a Demonstration to EPA for approval seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the impoundment to continue to receive CCR and non-CCR wastestreams after April 11, 2021. In the Demonstration, IPL requested an alternative closure deadline of December 31, 2022, for the OGS Ash Pond. EPA is proposing to deny the request for an extension based on a proposed determination that the Demonstration does not meet the requirements of § 257.103(f)(1) and a proposed determination that Ottumwa Generating Station has failed to demonstrate that the facility is in compliance with the requirements of 40 C.F.R. § 257 Subpart D.

DATES: *Comments.* Comments must be received on or before February 23, 2022.

ADDRESSES AND PUBLIC PARTICIPATION: The EPA has established a docket for this notice under Docket ID No. EPA-HQ-OLEM-2021-0593. EPA established a docket for the August 28, 2020, CCR Part A final rule under Docket ID No. EPA-HQ-OLEM-2019-0172. All documents in the docket are listed in the https://www.regulations.gov index. Publicly available docket materials are available either electronically at https://www.regulations.gov or in hard copy at the EPA Docket Center. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding holidays. The telephone number for the Public Reading

Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742. You may send comments, identified by Docket ID. No. EPA-HQ-OLEM-2021-0593, by any of the following methods:

- Federal e-Rulemaking Portal: https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management, Docket ID No. EPA-HQ-OLEM-2021-0593, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier (by scheduled appointment only): EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. – 4:30 p.m., Monday – Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia

submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

Due to public health concerns related to COVID-19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at https://www.epa.gov/dockets.

The EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

FOR FURTHER INFORMATION CONTACT: For information concerning this proposed decision, contact:

- Lydia Anderson, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0523; email address: Anderson.Lydia@epa.gov, and/or
- Kirsten Hillyer, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0542; email address: Hillyer.Kirsten@epa.gov.
- For more information on this rulemaking please visit https://www.epa.gov/coalash.

SUPPLEMENTARY INFORMATION:

Table of Contents

List of Acronyms

ACM – Assessment of Corrective Measures

ASD – Alternate Source Demonstration

CBI – Confidential Business Information

CCR – Coal Combustion Residuals

C.F.R. – Code of Federal Regulations

ELG – Effluent Limit Guidelines

EPA – Environmental Protection Agency

FGD – Flue gas desulfurization

GWMCA – Groundwater Monitoring Corrective Action

IDNR – Iowa Department of Natural Resources

IPL – Interstate Power and Light Company

LVWTP – Low Volume Wastewater Treatment Pond

MGD – Million gallons per day

MISO – Midcontinent Independent System Operator, Inc.

MNA – Monitored Natural Attenuation

mV – millivolts

MW – megawatts

NPDES – National pollutant discharge elimination system

OGS – Ottumwa Generating Station

OML – Ottumwa Midland Landfill

P.E. – Professional Engineer

PEM – palustrine emergent wetlands

POTW – Publicly Owned Treatment Works

PUB – palustrine unconsolidated bottom wetlands

RTO – Regional Transmission Organization

RCRA – Resource Conservation and Recovery Act

S&L – Sargent and Lundy

SSL – Statically significant level

ZLD – Ottumwa Zero Liquid Discharge Pond

I. General Information

A. What decision is the agency making?

The Environmental Protection Agency (EPA) is proposing to deny the Demonstration submitted by Interstate Power and Light Company (IPL) for a coal combustion residuals (CCR) surface impoundment, the Ottumwa Generating Station (OGS) Ash Pond, located at the OGS

near Ottumwa, Iowa. IPL submitted a Demonstration to EPA for approval seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the OGS Ash Pond surface impoundment to continue to receive CCR and non-CCR wastestreams after April 11, 2021. EPA is proposing that IPL cease receipt of waste into the CCR surface impoundment no later than 135 days from the date of EPA's final decision.

B. What is the agency's authority for taking this decision?

This proposal is being issued pursuant to the authority in 40 C.F.R. § 257.103(f).

II. Background

A. Part A Final Rule

In April 2015, EPA issued its first set of regulations establishing requirements for CCR surface impoundments and landfills. (Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities,80 FR 21301) (the "CCR Rule"). In 2020, EPA issued the CCR A Holistic Approach to Closure Part A: Deadline to Initiate Closure rule (85 FR 53516 (Aug. 28, 2020)) (the "Part A Rule"). The Part A Rule established April 11, 2021, as the date that electric utilities must cease placing waste into all unlined CCR surface impoundments. The Part A Rule also revised the alternative closure provisions of the CCR Rule (40 C.F.R. § 257.103) by allowing owners or operators to request an extension to continue to receive both CCR and non-CCR wastestreams in an unlined CCR surface impoundment after April 11, 2021 provided that certain criteria are met. EPA established two site-specific alternatives to initiate closure of CCR surface impoundments (40 C.F.R. § 257.103(f)), commonly known as extensions to the date to cease receipt of waste: (1) development of alternative capacity by the April 11, 2021 deadline is technically infeasible (40 C.F.R. §

257.103(f)(1)), and (2) permanent cessation of a coal-fired boiler(s) by a date certain (40 C.F.R. § 257.103(f)(2)).

The first site-specific alternative to initiate closure of CCR surface impoundments is *Development of Alternative Capacity is Technically Infeasible* (40 C.F.R. § 257.103(f)(1)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using its unlined surface impoundment for the specific amount of time needed to develop alternative disposal capacity for its CCR and non-CCR wastestreams. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(1). To have an alternative deadline approved, the regulation requires the facility to demonstrate that: (1) no alternative disposal capacity is currently available on- or off-site of the facility; (2) the CCR and/or non-CCR waste stream must continue to be managed in that CCR surface impoundment because it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity either on or off-site at the facility by April 11, 2021; and (3) the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. § 257.103(f)(1)(i)-(iii). To support the requested alternative deadline, the facility must submit detailed information demonstrating that the amount of time requested is the fastest technically feasible time to complete development of alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A).

The second site-specific alternative to initiate closure of CCR surface impoundments is for the owner or operator to demonstrate that it will permanently cease operation of coal-fired boilers at the facility. *Permanent Cessation of Coal-Fired Boiler(s) by a Date Certain*, (40 C.F.R. § 257.103(f)(2)). Under this alternative an owner or operator may submit a demonstration seeking EPA approval to continue using an unlined CCR surface impoundment in the interim period prior to permanently stopping operation of coal-fired boiler(s) at the facility. The

demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(2). The owner or operator must show that (1) the facility will cease operation of coal-fired boiler(s) and complete closure of the CCR surface impoundment(s) by the specified deadlines (no later than October 17, 2023 for impoundments 40 acres or smaller and no later than October 17, 2028 for impoundments larger than 40 acres); and (2) in the interim period prior to the closure of the coal-fired boiler, the facility must continue to use the CCR surface impoundment due to the absence of alternative disposal capacity both on-site or off-site. *Id*. Unlike the requirements for the first alternative, the owner or operator does not need to develop alternative disposal capacity. The regulations require a demonstration that: (1) no alternative disposal capacity is available on or off-site of the facility; (2) the risks from continued use of the impoundment have been adequately mitigated; (3) the facility is in compliance with all other requirements of 40 C.F.R. part 257 subpart D; and (4) closure of both the impoundment and the coal-fired boiler(s) will be completed in the allowed time. 40 C.F.R. § 257.103(f)(2)(i)-(iv).

B. Ottumwa Generating Station

On November 30, 2020, the Interstate Power and Light Company submitted a Demonstration (referred to as the "Demonstration" in this document) pursuant to 40 C.F.R. § 257.103(f)(1) requesting additional time to develop alternative capacity to manage CCR and non-CCR wastestreams at OGS near Ottumwa, Iowa. IPL, a subsidiary of Alliant Energy, is the co-owner and operator of the OGS. The other co-owner is MidAmerican Energy Company. The Demonstration submitted by IPL seeks approval of an alternative site-specific deadline to initiate closure of its OGS Ash Pond. Specifically, IPL requests an alternative deadline of December 31, 2022, by which date IPL would cease routing all CCR and non-CCR wastestreams to the OGS Ash Pond and initiate closure of the impoundment. IPL plans to obtain alternative capacity to the

Ottumwa Ash Pond by (1) converting wet handling systems to dry handling systems for certain boiler ash; (2) constructing a new non-CCR wastestream basin for non-CCR flows; and (3) rerouting at least one non-CCR wastestream to a new Iowa Department of Natural Resources (IDNR)–permitted outfall.

To assist the readers' review, EPA provides additional details below on the Ottumwa facility, including information on the generation capacity of the Ottumwa Generating Station, information on its CCR surface impoundments, and information on other non-CCR impoundments. This summary is based on information extracted from the Demonstration.

1. Coal-fired boilers and generation capacity.

The Demonstration states that Ottumwa Generating Station operates one coal-fired unit with a total generation capacity of 726 megawatts (MW).

2. CCR units and CCR wastestreams.

The Demonstration identifies two CCR units at OGS that are subject to the federal CCR regulations. One unit is a surface impoundment named the Ottumwa Generating Station Ash Pond (and also referred to as the "Surface Impoundment" in the Demonstration and hereafter in this document as the "OGS Ash Pond"). The OGS Ash Pond is the CCR unit for which an alternative deadline is sought. The Demonstration states that the approximate surface area of the OGS Ash Pond is 39 acres. The other unit is an inactive, unlined CCR surface impoundment of approximately 19 acres called the Ottumwa Zero Liquid Discharge Pond (ZLD Pond). According to the Demonstration, the ZLD has not received waste since October 2015, however, it contains water and CCR materials. IPL intends to close the ZLD by removal of CCR. Basic information about the OGS CCR units is summarized below in **Table 1.**

The OGS Ash Pond is an unlined CCR surface impoundment and subject to closure pursuant to 40 C.F.R. § 257.101(a)(1). This provision provides that IPL must cease placing CCR and non-CCR wastestreams into the unit and either retrofit or close it as soon as technically feasible, but not later than April 11, 2021. IPL intends to close the OGS Ash Pond by capping CCR materials in place. The Demonstration states that the OGS Ash Pond and ZLD are in compliance with the CCR Rule.

IPL is requesting an alternative site-specific deadline of December 31, 2022, to cease receipt of CCR and non-CCR wastestreams to the OGS Ash Pond. According to the Demonstration, the basis for this request is the infeasibility of developing alternative capacity by April 11, 2021. According to the Demonstration IPL's approach to developing alternative capacity must facilitate the management of the plant's CCR and non-CCR wastestreams throughout construction in a way that allows the plant to meet the National Pollutant Discharge Elimination System (NPDES) discharge limits.

According to the Demonstration, during its past operation IPL sluiced bottom ash and economizer ash generated at OGS to its on-site Ash Pond. The Demonstration explains that, as of November 30, 2020 (the date IPL submitted the Demonstration to EPA), IPL was in an outage (initiated in September 2020) of its OGS boiler unit for the purpose of installing the dry ash handling system. According to the Demonstration, the result of the outage would be the elimination of continuous flows of bottom ash transport water to the OGS Ash Pond. It is expected therefore that the sluicing of CCR to the OGS Ash Pond ceased in September 2020. The Demonstration also explains that the dry bottom ash handling conversion for the boiler unit would be completed in December 2020.

Even though IPL will no longer manage actively generated wastestreams in the OGS Ash Pond, it intends to place CCR in the OGS Ash Pond after April 11, 2021. The following quote is from Section 2.1.1 of the Demonstration (EPA inserted "OGS Ash Pond" in brackets for clarity):

> "IPL is currently completing installation of a dry bottom ash handling system and no longer discharges bottom ash to the Surface Impoundment [OGS Ash Pond]. There are currently no other CCR wastestreams to the Surface Impoundment [OGS Ash Pond]. However, the Surface Impoundment [OGS Ash Pond] will receive CCR material from the ZLD Pond when it is closed by removal of CCR and repurposed as a new lined wastewater treatment basin."

This means that IPL intends to dispose of at least one CCR wastestream in the OGS Ash Pond after April 11, 2021: the CCR materials stored in the ZLD. Additionally, based on the closure plan, it appears IPL is planning to place the contents of the hydrated fly ash stockpile in the OGS Ash Pond after April 11, 2021 (further discussed below).

IPL also owns and operates a nearby off-site CCR landfill, the Ottumwa Midland Landfill (OML). Section 3.0 of the Demonstration states that this unit is about 12 miles away from OGS but Appendix A of the Demonstration states that approximately 5 miles separates the OML from OGS. One wastestream that the OML receives is the portion of precipitator fly ash from the station's flue gas desulfurization (FGD) control process that is not collected by the electrostatic precipitators. After being collected in a bag house, this precipitator fly ash is disposed of in the landfill. Because this landfill is off-site, IPL was not required to demonstrate that it is in compliance with the CCR Rule to be approved for its alternative closure provision request for the OGS Ash Pond.

In addition to CCR surface impoundments, OGS has what appears to be an inactive[1] on-site CCR pile, the hydrated fly ash stockpile. IPL did not discuss this pile in the Demonstration narrative; EPA's information about this pile is based on the Agency's review of the Updated Closure Plan (November 2020) and the attachments submitted with the Demonstration. The hydrated fly ash stockpile is located along the western boundary of the ZLD. Appendix C8 of the Demonstration provides a general overview of the history of this pile and several details regarding its normal operation. Before October 2015, the hydrated fly ash stockpile received the generated precipitator fly ash after it had been processed by OGS's fly ash reclamation processing area. The result of this process was a "very hard, cement-like material" that was stored on-site or transported off-site. According to IPL's Updated Closure Plan, the hydrated fly ash stockpile currently contains approximately 440,000 cubic yards of material.

The Demonstration states that OGS recycles the outflow (effluent) from the OGS Ash Pond throughout the plant or discharges it through permitted outfalls. IPL provided an existing water balance diagram in Appendix A of the Demonstration.

3. Non-CCR units and non-CCR wastestreams

According to the Demonstration, there is one existing non-CCR surface impoundment on-site at OGS, the Coal Pile Runoff Pond. This is a small pond located on the northern border of the ZLD and the hydrated fly ash stockpile. The current NPDES permit suggests that this pond has an outfall that discharges the effluent from this pond to a tributary of the Des Moines River. Appendix C8 of the Demonstration indicates that, occasionally, excess stormwater runoff from the Coal Pile Runoff Pond is routed to the ZLD via a culvert which connects the two ponds.

[1] The Demonstration states that the hydrated fly ash stockpile has not received waste after October 19, 2015. See Appendix C8, section 2

A non-CCR Pond at OGS, which will be called a Low Volume Wastewater Treatment Pond (LVWTP), will be constructed to treat the non-CCR wastestreams that are currently routed to the OGS Ash Pond. The LVWTP will be constructed in the footprint of the existing ZLD after it has been closed by removal of CCR. The approximately 165,000 cubic yards[2] of CCR material in the ZLD Pond will be excavated and consolidated in the OGS Ash Pond. Once the ZLD Pond is dewatered and dredged and the subgrade and earthwork are complete, it will receive a new liner system and be repurposed as the LVWTP. IPL explained that once installation of the dry handling system is complete, construction of the LVWTP is complete and ready to receive waste, and the remaining non-CCR flows are rerouted to the LVWTP, the OGS Ash Pond will cease receipt of all waste.

IPL explained that the facility's generated non-CCR wastestreams must continue to be managed in the OGS Ash Pond until the projected, new non-CCR basin, the LVWTP, can receive them. According to the visual timeline included in Appendix B of the Demonstration, the piping reroutes to the new LVWTP are scheduled to be completed by November 4, 2022. The OGS Ash Pond would cease receiving waste and begin closure on December 31, 2022.

The Demonstration identifies over ten non-CCR flows that are currently managed in the OGS Ash Pond (summarized below in **Table 1**). The OGS Ash Pond receives a total of approximately 1.54 million gallons per day (MGD) of commingled non-CCR waste. From the OGS Ash Pond, the facility's commingled wastestreams are recycled for reuse in the plant or discharged through the facility's NPDES Outfall 001.

Table 1. Summary of on-site impoundments and affected wastestreams

CCR Units	Unit	Type	Area (acres)	Capacity (million gallons)	Affected Unit?

[2] Updated Closure Plan, November 2020, Appendix A, Section 4, Table 1

	Zero Liquid Discharge Pond	Impoundment	19	Unspecified	Yes, inactive
	Surface Impoundment (OGS Ash Pond)	Impoundment	39	Unspecified	Yes
Non-CCR Impoundments	Coal pile runoff pond-surface area and capacity unspecified				

Affected Wastestreams- currently handled or projected to be handled in OGS Ash Pond	**Type**	**Description**	**Generation Rate (MGD)**
	CCR	CCR materials excavated from ZLD	Approx. 165,000 cubic yards total CP
		Hydrated fly ash stockpile CP	Approx. 440,000 cubic yards total CP
	Non-CCR	Clarifier Sludge	0.0936
		Cooling Tower Blowdown	0.641
		Ultrafilter Backwash	0.026
		Gravity Filter Backwash	0.132
		Reverse Osmosis Reject	0.161
		Condensate Polisher Wastewater	0.0058
		Boiler Blowdown	0.183
		Misc. Oily Plant Drains	0.194
		Misc. Plant Drains (intermittent)	< 0.072
		Stormwater	1.44
		Air Heater Wash Water	Intermittent
		Water currently impounded in ZLD	Volume contained in ZLD is unknown
		On-site Sewage Treatment Wastestreams	0.004

CP= Information extracted from IPL's Updated Closure Plan (November 2020)

Based on information in the OGS NPDES permit (Iowa NPDES #9000101, amended on August 1, 2020), it appears there is at least one additional non-CCR wastestream that the OGS Ash Pond receives that was not included in the Demonstration. It appears that the "combustion residual landfill leachate" wastestream discharges via Outfall 001 from the OGS Ash Pond. The Demonstration and its attachments do not provide discussion of this wastestream or any technical information about it, such as rate of generation.

When it is completed, IPL plans to handle all its non-CCR flows in the LVWTP, except for the cooling tower blowdown and the air heater wash. IPL plans to seek a permit for a new

Outfall 007 that will discharge into the Des Moines River and reroute the cooling tower blowdown wastestream directly to this new outfall. The air heater wash is generated intermittently, only during outages. For any outages after April 11, 2021, IPL stated in the Demonstration that it plans to collect this wastestream and process it through temporary treatment before discharging to Outfall 001. It appears that IPL plans to manage this wastestream in the LVWTP once it is operational.

III. EPA Analysis of Demonstration

EPA has determined that the Demonstration IPL submitted pursuant to 40 C.F.R § 257.103(f)(1) for the CCR surface impoundment, the OGS Ash Pond, at the Ottumwa Generating Station was complete. While EPA did determine the Demonstration to be complete, EPA is proposing to deny the extension request based on a proposed determination that the OGS has not demonstrated that it is in compliance with all the requirements of 40 C.F.R. part 257 subpart D. This is based on concerns with the groundwater monitoring at the facility, with the corrective measures assessment, and because it appears that the OGS Ash Pond will not meet the closure performance standards for CCR surface impoundments. EPA is proposing that IPL cease placement of all CCR and non-CCR wastestreams into the OGS Ash Pond no later than 135 days from the date of EPA's final decision.

A. Evaluation of IPL's Claim of No Alternative Disposal Capacity On- or Off-Site

To obtain an extension of the cease receipt of waste deadline, the owner or operator must demonstrate that there is no alternative disposal capacity available on- or off-site. 40 C.F.R. § 257.103(f)(1)(iv)(A). As part of this, facilities must evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). The owner or operator must also evaluate the site-specific conditions that affected the options

considered. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*). Additionally, the regulations prohibit the owner or operator from relying on an increase of cost or inconvenience of existing capacity as a basis for meeting this criterion. 40 C.F.R. § 257.103(f)(1)(i).

The Demonstration must substantiate the absence of alternative capacity for each wastestream that the facility is requesting to continue placing in the CCR surface impoundment beyond April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). As soon as alternative capacity is available for any wastestream, the owner or operator must use that capacity instead of the unlined CCR surface impoundment. 40 C.F.R. § 257.103(f)(1)(v). This means that, if there is a technically feasible option to reroute any of the wastestreams away from the surface impoundment, the owner or operator must do so. 40 C.F.R. § 257.103(f)(1)(ii), (v). In the CCR Part A Rule preamble, EPA acknowledged that some of these wastestreams are very large and will be challenging to relocate, especially for those that are sluiced. However, the smaller volume wastestreams have the potential to be rerouted to temporary storage tanks. In such cases, the owner or operator must evaluate this option, and, if it is determined to be technically feasible, must implement it. 85 Fed. Reg. 53,541.

1. Lack of Alternative On- or Off-site Capacity for CCR wastestreams.

<u>CCR within the ZLD Pond</u>

According to the Demonstration, IPL intends to remove the CCR from the ZLD Pond and place them in the OGS Ash Pond after April 11, 2021. The Demonstration included no analysis of the off-site or on-site alternatives available for disposing of these wastes, as required by 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*).

Further, it appears that alternative capacity may exist for this wastestream. Specifically, the off-site OML is a potential disposal option for the CCR and subgrade material that will be

excavated from the ZLD Pond. The OML is a CCR unit that has previously received at least some of the OGS's precipitator fly ash. IPL did not consider this option. IPL was required to provide a written narrative of the alternative capacity options available on- and off-site for the planned placement of any CCR in the OGS Ash Pond that will occur after April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(1). Accordingly, EPA is proposing to determine that IPL has not met the criteria in 40 C.F.R. § 257.103(f)(1)(i) and (ii)(A).

Hydrated Fly Ash Stockpile

Based on information in IPL's Updated Closure Plan, it appears that the company plans to place the contents of the hydrated fly ash stockpile in the OGS Ash Pond after April 11, 2021. This wastestream is not mentioned in the Demonstration. It appears that IPL intends to use the hydrated fly ash as part of its plan to close the OGS Ash Pond by capping with "waste in place." For further discussion, see Section E. Compliance Documentation. If IPL intends to place this wastestream in the OGS Ash Pond, then it is a CCR wastestream for which IPL was required to provide an analysis of the potential on-site and off-site alternatives. 40 C.F.R. § 257.103(f)(1)(iv)(A)(1).

Additionally, it appears that alternative disposal capacity may exist for the hydrated fly ash because Appendix C8 of the Demonstration explains that the hydrated fly ash was typically transported off-site during past operations. IPL did not justify why the OML or the other previously used off-site disposal alternative capacities are not available to receive the hydrated fly ash.

For these reasons, EPA is proposing to determine that IPL has not demonstrated that there is no existing on- or off-site capacity for the hydrated fly ash, as required by 40 C.F.R. § 257.103(f)(1)(i) and (ii)(A).

2. *Lack of Alternative On-site Capacity: Non-CCR wastestreams*

IPL concluded that there is no alternative capacity available on-site for any of the non-CCR wastestreams currently managed in the OGS Ash Pond. EPA is proposing to conclude that IPL has sufficiently justified this determination for three non-CCR wastestreams but that it has not adequately justified this determination for nine of its non-CCR wastestreams.

Three of the non-CCR wastestreams currently managed in the OGS Ash Pond are of high solids content: the clarifier sludge, the reverse osmosis reject, and the ultrafilter backwash. IPL stated in Table 2-1 of the Demonstration that these wastestreams cannot be directly discharged and require treatment in the OGS Ash Pond until they can be routed to the future LVWTP Additionally, IPL sized its future LVWTP to achieve the necessary solids settling to meet NPDES discharge limits. EPA is proposing to agree with IPL that these wastestreams cannot be directly discharged and require a large impoundment to achieve the necessary gravitational solids settling. Until the future 19-acre LVWTP is available to receive the flows, EPA is proposing to determine that there is no existing alternative on-site capacity for these three wastestreams.

However, for eight of the non-CCR wastestreams currently treated in the OGS Ash Pond (i.e., cooling tower blowdown, gravity filter backwash, condensate polisher wastewater, boiler blowdown, misc. oily plant drains, misc. plant drains, stormwater, and on-site sewage treatment wastewaters), Table 2-1 provides the following explanation: "There is currently no infrastructure on-site to discharge this wastestream directly or manage at another location on site." And as noted earlier, IPL included no discussion of the "combustion residual landfill leachate" wastestream that is currently discharged via Outfall 001 from the OGS Ash Pond. To demonstrate that there is no alternative disposal capacity available on- or off-site, IPL was

required to evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i).

Further, IPL failed to adequately address potential alternatives that exist on-site. The Coal Pile Runoff Pond is an existing on-site non-CCR surface impoundment. IPL states in the Demonstration[3] that the Coal Pile Runoff Pond is not large enough to treat the facility's non-CCR wastestreams; however, IPL did not provide technical supporting details, such as the pond capacity. The Demonstration also provides no analysis of whether the Coal Pile Runoff Pond could treat individual non-CCR wastestreams, which does not meet the requirements of 40 C.F.R. §§ 257.103(f)(1)(iv)(A)(*1*); (v). Considering that IPL plans to reroute at least one wastestream (cooling tower blowdown) directly to an outfall, it appears that intensive solids settling is not needed for some non-CCR wastestreams.

EPA is also proposing to conclude that IPL did not demonstrate that it was technically infeasible to provide alternative on-site capacity for the cooling tower blowdown before April 11, 2021. In Table 2-1, IPL states, "This wastestream [cooling tower blowdown] will be routed and pumped around the LVWTP to a new Outfall 007 to the Des Moines River. The infrastructure not currently available to discharge this wastestream directly or manage at another location on site and the site discharge permit must be modified before this could occur." IPL stated that it expects the approval of the new permitted Outfall 007 by spring 2022[4] and it anticipates completing the reroute of the cooling tower blowdown to this outfall by October 2022.[5] However, IPL failed to explain why these activities could not have been completed prior to April 11, 2021. And as discussed below in *Section D. Justification of Time Requested*, IPL

[3] Section 2.1.3
[4] Demonstration, section 2.3
[5] Demonstration, Table 2-1

failed to provide a detailed schedule of the time needed to complete this process in the Demonstration. Accordingly, EPA is proposing to determine that IPL has not demonstrated that it was technically infeasible to divert this wastestream before April 11, 2021, and therefore has not demonstrated that there is no existing on-site capacity, as required by 40 C.F.R. §§ 257.103(f)(1)(iv)(A)(*1*); (v).

IPL considered implementing temporary storage as alternative capacity for the OGS non-CCR wastestreams. IPL concluded that there is not sufficient footprint within the OGS property boundary to accommodate temporary storage for the combined volume of the facility's non-CCR wastestreams. Figure 2 in Appendix A of the Demonstration shows an aerial map of the site, including the existing OGS, the surrounding floodplains, and sensitive drainage areas that could be impacted by construction. IPL estimated that 140 frac tanks per day would be needed to manage the combined volume of the facility's non-CCR wastestreams. EPA has reviewed the information provided and is proposing to conclude that there is not sufficient available footprint on-site at OGS to implement temporary storage to treat and store the combined volume of the facility's non-CCR flows.

However, IPL did not consider whether there is enough available footprint on-site to implement a temporary storage solution for one or more of the other, smaller OGS wastestreams. OGS produces four non-CCR wastestreams that are small (of generation rates of 2,600 gal/day or less). These are the ultrafilter backwash, condensate polisher wastewater, miscellaneous plant drains, and on-site sewage treatment. IPL estimated that the ultrafilter backwash could be stored in approximately two frac tanks per day, the condensate polisher could be stored in one frac tank per day, the miscellaneous plant drains in four frac tanks per day, and the on-site sewage in one frac tanks per day, respectively. These would have a significantly lower footprint than would be

required to store the total volume of non-CCR wastestreams. However based on the available information, EPA cannot determine how many frac tanks could be stored on-site at OGS.

In sum, IPL did not evaluate existing on-site alternative capacity options for each wastestream, as required by 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). For this reason, EPA is proposing to conclude that IPL has not adequately justified that there is no existing alternative capacity on-site for its non-CCR wastestreams

3. Lack of Alternative Off-site Capacity: Non-CCR wastestreams

IPL concluded that off-site disposal of the OGS non-CCR wastestreams is not technically feasible. The reasons presented in support of IPL's conclusion that there is no off-site capacity for its non-CCR wastestreams are (1) the challenges associated with transporting large volumes of wastestreams off-site and (2) that there is no known publicly owned treatment works (POTW) that could receive the wastestreams. EPA is proposing to conclude that IPL has failed to demonstrate that transportation of each wastestream is technically infeasible because IPL did not provide evidence that off-site alternative capacity is not available for each individual wastestream.

Transporting Wastestreams Off-site

IPL explained that there is no existing infrastructure that could transport its combined non-CCR wastestreams to an off-site treatment facility and that constructing this infrastructure would further delay the final receipt of waste to the OGS Ash Pond. *See section 2.1.5 of the Demonstration.* IPL determined that off-site transport by trucking is infeasible for the combined volume of its wastestreams because of several factors, including the large number of frac tanks required for temporary storage, significant daily tanker truck traffic, potential safety and noise

impacts, and greenhouse gas emissions. IPL estimated that at least 300 trucks per day would be required to transport the total non-CCR wastestream volume off-site.

However, IPL did not evaluate whether trucking individual wastestreams to an off-site disposal facility is technically feasible. The failure to evaluate the potential for each individual wastestream to be sent off-site for disposal alone would be a basis for denial. As stated in the Part A final rule preamble, "[T]he final rule requires owners and operators to cease using the CCR surface impoundment as soon as feasible, to document the lack of both on and off-site capacity for each individual wastestream, and expressly requires that as capacity for an individual wastestream becomes available, owners or operators are required to use that capacity…" (85 FR 53541). See, 40 C.F.R. §§ 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v).

In addition, IPL provided an estimate of the number of frac tanks and trucks that would be required to transport each of its wastestreams off-site. See section 2.1.2 of the Demonstration. Using these estimates it appears that there are a few wastestreams that based on volume alone could potentially have been trucked to an off-site POTW. IPL found that off-site transportation for the following wastestreams would require at most ten trucks per wastestream per day:

- Ultrafilter backwash: two frac tanks on-site and four daily trucks
- Condensate polisher wastewater: one frac tank on-site and one daily truck
- Miscellaneous plant drains: four frac tanks and ten daily tanker trucks
- On-site sewage: one frac tank on-site and one daily tanker truck

EPA considers it reasonable for a facility to divert a wastestream using ten or fewer trucks per day. Accordingly, EPA is proposing to conclude that IPL has not met 40 C.F.R. § 257.103(f)(1)(iv)(A)(1).

Lack of POTW

IPL stated in the Demonstration that it has, "not yet identified a publicly owned treatment works (POTW) or alternate wastewater treatment facility that will accept these wastestreams." However, the Demonstration provides no evidence that IPL attempted to find a POTW that could accept any of the individual wastestreams. Such an analysis fails to meet the requirements of 40 C.F.R. § 257.103(f)(1)(iv)(A)(1).

Further, it appears that there are POTWs that could accept some of the individual wastestreams. As part of analyzing the Demonstration, EPA evaluated facilities within a 50-mile radius of OGS that could potentially receive at least some of the OGS non-CCR wastestreams. Using the IDNR's publicly available database, EPA identified 170 domestic and industrial wastewater facilities within a 50-mile radius of OGS. One hundred of the facilities within the 50-mile radius are reported to have an average wet weather flow rate (proxy for peak flow rate) of less than 0.1 MGD. Based on flowrate, it may be possible for these 100 facilities to receive OGS's smaller wastestreams: the ultrafilter backwash, condensate polisher wastewater, miscellaneous plant drains, and on-site sewage treatment wastestreams. Further, several of these facilities appear to be designed to treat domestic wastewater and appear suitable to treat (at least) the sewage treatment wastestream from OGS.

According to the IDNR's publicly available database, eight facilities within a 50-mile radius of OGS are reported to have an average wet weather flow of more than 3 MGD. Based on flowrate, these are off-site capacity options that could potentially receive at least some of the OGS wastestreams. The Demonstration does not provide the required assessment of whether these facilities could treat some or all of the non-CCR wastestreams from OGS.

Additionally, Google Earth satellite images suggest that there are two impoundments located around the OML, which is located off-site within 12 miles of the plant. The written narrative provided in the Demonstration does not mention these impoundments or provide details such as their capacity or possible liner system. Figure 4 of the OML 2020 Annual Groundwater Monitoring and Corrective Action (GWMCA) report[6] labels a pond immediately to the west as, "Temporary Contact Water Basin No 1/2." Figure 4 also labels a pond immediately to the south of the OML, "Existing Sedimentation Basin No. 1." In its review of the Demonstration and OGS compliance documents, EPA could not discover further information about these ponds, such as their capacity, influent wastestreams, and the possible existence of a liner system. The Demonstration did not consider these ponds as potential alternative off-site capacity for the OGS non-CCR wastestreams.

In sum, EPA is proposing to conclude that IPL did not demonstrate that there is no off-site capacity for its non-CCR wastestreams because it did not evaluate existing potential alternative capacity options and provided no evidence that it attempted to find off-site alternative capacity for its individual wastestreams. EPA is also proposing to conclude there may be existing off-site capacity for at least some of the non-CCR wastestreams because (1) there are potential off-site facilities that IPL did not consider and (2) the number of frac tanks and tanker trucks required to transport the facility's smallest non-CCR wastestreams is not prohibitive.

B. Evaluation of IPL's Analysis of Adverse Impacts to Plant Operations

In the Part A Rule, EPA stated that it is important for the facility to include an analysis of the adverse impacts to the operation of the power plant if the CCR surface impoundment could

[6] 2020 Annual GWMCA Report, Ottumwa Midland Landfill, Figure 4 "Potentiometric Surface Map October 5-6, 2020"

not be used after April 11, 2021. EPA stated that this is an important factor in determining whether the disposal capacity of the CCR surface impoundment in question is truly needed by the facility. EPA required that a facility provide analysis of the adverse impacts that would occur to plant operations if the CCR surface impoundment in question were no longer available. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*ii*). EPA is proposing to find that there would be adverse impacts to the power plant if the CCR impoundment could not be used after April 11, 2021.

IPL states in the Demonstration that "to continue to operate, generate electricity, and comply with both the CCR Rule and the IDNR permit conditions, OGS must continue to use the Surface Impoundment for treatment of non-CCR wastestreams until alternate disposal capacity can be developed." It further explains that if the OGS Ash Pond were unable to receive the facility's non-CCR wastestreams before construction of the LVWTP is complete, OGS would have to cease generating power.

EPA is proposing to determine that if IPL were unable to continue using the OGS Ash Pond, and if no other on- or off-site alternative capacity were available, there would be adverse impacts on IPL's ability to run the associated boiler(s) such that a planned temporary outage would likely be required. But as discussed in Unit IV, EPA disagrees that there will be any broader impacts of such an outage.

C. Evaluation of IPL's Site-Specific Analysis for the Alternative Capacity Selected

To support the alternative deadline requested in the demonstration, the facility must submit a workplan that contains a detailed explanation and justification for the amount of time requested. 40 C.F.R. § 257.103(f)(1)(iv)(A). The written workplan narrative must describe each option that was considered for the new alternative capacity selected, the time frame under which each potential capacity could be implemented, and why the facility selected the option that it did.

Id. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). The discussion must include an in-depth analysis of the site and any site-specific conditions that led to the decision to implement the selected alternative capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*).

In this section, EPA explains why it is proposing to agree with IPL's determination that certain alternate capacity options were not feasible or would further delay the OGS Ash Pond's final receipt of waste and summarizes the option selected by IPL.

IPL reviewed the alternative capacity options in the Part A final rule and conducted an analysis of their feasibility at Ottumwa Generating Station. See Table 2-2 of the Demonstration. IPL used the average development time[7] for each technology listed in the Part A final rule and discussed whether implementing each alternative would be feasible at OGS. The following alternative capacity options were evaluated: conversion to dry handling, non-CCR wastewater basin, wastewater treatment facility, new CCR surface impoundment, retrofit of a CCR surface impoundment, multiple technology system, and a temporary treatment system. IPL projected to complete its dry ash handling system by December 2020, therefore the technologies that IPL evaluated are related to obtaining alternative capacity for the OGS's non-CCR flows.

IPL did not elect to build a wastewater treatment plant. Table 2-2 of the Demonstration indicates that this technology is feasible at OGS, however IPL stated that designing and permitting the new facility would add an additional six months to what it has currently projected. IPL did not choose to construct a new CCR surface impoundment because there is insufficient footprint readily available for development and this option would not alone facilitate compliance

[7] 85 Fed. Reg at 53543

with the Effluent Limitation Guidelines (ELG). As discussed below in this section, IPL provided evidence that it does not have this land available on-site.

IPL justified its decision to implement its chosen alternative capacity because it will facilitate compliance with the ELG regulations. Because the direct discharge of bottom ash will not be allowed, IPL chose to convert its ash handling systems from wet to dry. At the time of the Demonstration submittal, IPL had projected to complete its dry handling conversion by December 2020. IPL stated that as of September 2020, it ceased sluicing all ash to the OGS Ash Pond. Therefore, at the time of the publication of this proposal, it is expected that this conversion has been completed and that all regularly generated CCR flows to the OGS Ash Pond have ceased.

IPL elected to construct a non-CCR basin to handle the facility's non-CCR flows in the future. It justified its decision to construct the LVWTP in the footprint of the existing ZLD because of the lack of available space at OGS. There is land outside OGS but within the plant boundary, but IPL explained that there is not sufficient available footprint on which to build a basin large enough to manage OGS's non-CCR wastestreams. Further, IPL discussed the permitting challenges that would extend the timeline of developing this land. IPL explained that the sizing of the LVWTP was calculated to provide adequate residence time for the solids settling of its wastestreams and volume storage for stormwater runoff surges. To provide adequate residence time, IPL stated that the LVWTP will have a capacity of 18 million gallons and a surface area of 19 acres.

Figure 2 in Appendix A of the Demonstration illustrates the on-site constraints that limit the possibility of developing new infrastructure at OGS, including the Des Moines River, Middle Avery Creek, floodplains, wetlands, and existing infrastructure. IPL explained that it does own

land outside the developed portion of the site on the south side of Middle Avery Creek, but that construction of a 19-acre non-CCR basin might detrimentally impact U.S. waters, so it does not consider this area to be suitable for new infrastructure. IPL explained that development of this area would involve clearing of forested areas, changes in wetland function, acquisition of water rights, and destroying habitat that may be occupied by protected bat species.

IPL has released its construction contracts for bid for the new LVWTP and closure of the OGS Surface Impoundment in October 2020 (and it was expected to be awarded in March 2021). EPA is proposing to conclude that IPL has sufficiently justified its chosen alternative.

D. Evaluation of IPL's Justification for Time Requested

Facilities must justify the amount of time requested in the demonstration as the fastest technically feasible time to develop the selected alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*iii*). The workplan must contain a visual timeline and narrative discussion to justify the time request. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). The visual timeline must clearly indicate how each phase and the steps within that phase interact with or are dependent on each other and the other phases. Additionally, any possible overlap of the steps and phases that can be completed concurrently must be included. This visual timeline must show the total time needed to obtain the alternative capacity and how long each phase and step is expected to take. The detailed narrative of the schedule must discuss all the necessary phases and steps in the workplan, in addition to the overall time frame that will be required to obtain capacity and cease receipt of waste. The discussion must include (1) why the length of time for each phase and step is needed, (2) why each phase and step must happen in the order it is occurring, (3) a discussion of the tasks that occur during the specific step, and (4) the tasks that occur during each of the steps within the phase. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). This overall discussion of the

schedule assists EPA in understanding whether the time requested is warranted. Finally, facilities must include a narrative on the progress made towards the development of alternative capacity s of the time the demonstration was compiled. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*4*). This section of the Demonstration is intended to show the progress and efforts the facility has undertaken to work towards ceasing placement of waste in the CCR surface impoundment and to determine whether the submitted schedule for obtaining alternative capacity was adequately justified at the time of submission.

IPL requested a date of December 31, 2022, to cease receipt of all waste to its OGS Ash Pond. IPL's visual timeline and accompanying written Demonstration narrative present its plan to complete the closure of the ZLD and the construction of its new non-CCR basin, the LVWTP. The visual timeline (Appendix B of the Demonstration) was included with the Demonstration submittal. The presented information indicates the construction of the LVWTP is on a track that will allow the OGS Ash Pond to cease receipt of waste.

IPL concludes that the presented plans are the "fastest technically feasible" to achieve compliance at OGS. However, EPA's evaluation indicates that (1) the requested date to cease receipt of waste is not the fastest technically feasible, and (2) the presented workplan does not provide the sequence of steps required to reroute the cooling tower blowdown. For these reasons, EPA is proposing to determine that IPL has not met the standards in 40 C.F.R. § 257.103(f)(1)(A)(1)(iii) and 257.103(f)(1)(A)(2).

IPL's construction schedule projects a 50-hour work week with weekend work allowed as needed to make up time for weather delays. IPL assumes minimal construction activities will be possible in the winter. IPL included the following reasons that could postpone construction of the LVWTP: weather delays in dewatering and removal of CCR, contractor efficiency, changes to

the amount of CCR that is required to be removed, and COVID-19 pandemic impacts. IPL stated that it did not include time in its schedule for these potential delays. *See section 2.3 of the Demonstration and the visual timeline in Appendix B.*

EPA's analysis of the presented information indicates that if IPL would have initiated dewatering of the ZLD earlier, it would have been possible to complete construction of the LVWTP at least two and a half months sooner than it has projected. EPA also identified that IPL could save between two and three weeks by concurrently excavating CCR from the ZLD while executing the subgrade preparation activity. Additionally, the Agency could not identify why IPL requested December 31, 2022, as the OGS Ash Pond's final receipt of waste, considering that November 4, 2022, is when it has projected to complete rerouting the non-CCR wastestreams to the new LVWTP. In total, it appears that it IPL could cease receipt of waste to the OGS Ash Pond around five months sooner than it has planned. Readers may reference the visual timeline in Appendix B and the written narrative in 2.1.8 and 2.3 of the Demonstration.

At the time when the Demonstration was submitted, IPL's plan was to award the contract for dewatering the ZLD and constructing the LVWTP by March 1, 2021 (visual timeline activity ID 24). However, the chosen contractor will not mobilize the site until May 3, 2021 (activity ID 29). The first critical task the contractor needs to perform is dewatering the ZLD. This must be done before it can excavate and relocate ash from the ZLD Pond to the OGS Ash Pond. IPL plans to dewater the ZLD by pumping the liquids currently stored in the ZLD into the Ash Pond using diesel dewatering pumps. These pumps are readily available and do not require specialized personnel to operate. IPL did not justify why it did not start dewatering even before the LVWTP contract was awarded. If IPL themselves had dewatered with sufficient time before the LVWTP contract was awarded, it may have been possible for the contractor to begin excavating the ash

by the second quarter of 2021. Regardless, EPA could not determine why IPL's contractor is not projected to start dewatering sooner than May 31, 2021 (activity ID 31). The contractor is not scheduled to perform any duties in between the award of the contract and mobilization of the site. Therefore, EPA believes it may have been possible for the contractor to mobilize the site soon after award of the contract; dewatering potentially could have begun by March 15, 2021, which is two and half months earlier than planned.

Additionally, IPL did not explain why it could not execute activity IDs 36 and 37 concurrently with activity ID 35. In a pond the size of the ZLD (19 acres), overlapping these activities most likely is feasible, and would save two to three weeks.

Finally, IPL has projected that it can complete the activity of rerouting OGS's non-CCR wastestreams to the LVWTP by November 4, 2022 (activity ID 41 on the visual timeline). A final date of December 31, 2022, to cease receipt of waste therefore has not been justified. The only activity that the December 31, 2022 date is associated with on the visual timeline is activity ID 44, "Initiate closure of OGS Ash Pond." IPL did not justify why the time from November 4 to December 31, 2022, is needed to complete the measures necessary to cease receipt of waste to the OGS Ash Pond.

In sum, IPL did not justify why the contractor cannot begin to mobilize the site before May 3, 2021. If the contractor would have started dewatering on March 15, 2021, and ZLD excavation and subgrade were executed concurrently, it appears that IPL could have saved around three months. Considering that IPL has projected that excavation will extend 45 days into Season 2, saving these three months might have allowed IPL to begin liner installation in the second construction season. The Agency also believes IPL itself could have initiated dewatering before the contract was awarded, which likely would have allowed the contractor to begin

excavating the CCR as soon as the second quarter of 2021. Notwithstanding, if IPL overlaps subgrade and excavation activities in the ZLD, it should be possible to cease receipt of waste by October 13, 2022, which is approximately two and a half months sooner than IPL's requested date of December 31, 2022.

Date to divert cooling tower blowdown from OGS Ash Pond

The cooling tower blowdown is unique among the OGS non-CCR wastestreams in that, in the future, it will not be managed in the LVWTP. IPL intends to route and pump this wastestream around the projected LVWTP to a new Outfall 007, which would discharge into the Des Moines River. IPL plans that Outfall 007 will also be the outfall through which the LVWTP discharges. IPL anticipates that it can complete this reroute by October 2022. EPA could not evaluate whether October 2022 is the fastest technically feasible to complete the measures necessary for the OGS Ash Pond to cease receipt of the cooling tower blowdown because IPL's workplan did not provide activities and the associated schedule for this task, other than the expected approval date of its application with IDNR for permitting Outfall 007 (expected by no later than spring 2022).[8] EPA was therefore unable to evaluate whether IPL's requested date of October 2022 is justifiable because of the lack of detail provided. IPL's ability to achieve its projected date to cease receipt of waste is contingent, for example, on the approval of the permit for Outfall 007. To be approved for an alternate closure provision, IPL was required by 40 C.F.R. § 257.103(f)(1)(A)(*2*) to provide a detailed schedule of the fastest technically feasible time to complete the measures necessary for alternative capacity to be available. EPA is proposing to determine that the IPL's Demonstration does not meet this requirement.

[8] Demonstration, section 2.3

In conclusion, the presented work plan does not appear to be the fastest technically feasible for the OGS Ash Pond to cease receipt of waste because it appears the LVWTP could be operational nearly 5 months sooner than IPL's requested date. Additionally, no detailed workplan is provided for the steps required to achieve alternative capacity for the cooling tower blowdown. For these reasons, EPA is proposing to determine that IPL has not met the requirements of 40 C.F.R. § 257.103(f)(1)(A)(*2*).

The date on which the OGS Ash Pond ceases receipt of waste of the cooling tower blowdown poses a potential environmental impact. The cooling tower blowdown is a large wastestream of 0.641 MGD on average. The greater the volume of water the OGS Ash Pond receives, the higher the pond water level is, and the more water pressure (hydraulic head) will push down on the unit's base. Greater water pressure increases the risk of CCR constituents migrating downward into the groundwater. Considering that the OGS Ash Pond has triggered corrective action and is unlined, this risk presents greater concern.

1. Narrative of progress towards obtaining alternative capacity

In section 2.1.6 of the Demonstration, IPL described the efforts it has undertaken to develop alternative capacity to come into compliance with the CCR Rule. Sargent and Lundy (S&L) investigated alternative capacity technology options for IPL in 2016. After this study was completed, IPL chose to replace its wet ash sluicing system with a dry ash handling system. IPL hired Burns & McDonnell to "develop a design basis for the treatment of non-CCR wastestreams. The design basis for the treatment system included a new lined LVWTP, constructed within the footprint of the existing ZLD Pond, to treat non-CCR wastestreams generated at OGS..." IPL stated that its current NPDES permit requires that OGS cease the discharge of ash transport water by June 1, 2022.

IPL stated that construction of its ash handling system began in the fall of 2018, ultimately allowing the plant to cease sluicing bottom ash in September 2020. Thus, it is expected that, as of September 2020, IPL no longer sluiced actively generated CCR wastestreams to its OGS Ash Pond.

IPL stated that in October 2020 it released the construction contract for the LVWTP and closure of the OGS Ash Pond. IPL expects that it will award the contract in March 2021. IPL stated that it has completed the design of the LVWTP and that it is in the process of permitting the construction of the LVWTP and the closure of the OGS Ash Pond (through the IDNR). There are currently no wastestreams going to the ZLD and IPL stated that it expects the contractor can begin dewatering this CCR unit in the second quarter of 2021.

E. Compliance Documentation

The Part A Rule requires that a facility must be in compliance with all the requirements in 40 C.F.R. part 257 subpart D in order to be approved for an extension to the cease receipt of waste deadline. 40 C.F.R. § 257.103(f)(1)(iii). Various compliance documentation must be submitted with the demonstration for the entire facility, not just for the CCR surface impoundment in question. 40 C.F.R. § 257.103(f)(1)(iv)(B). Additionally, EPA evaluated the information presented in the narrative relating to the closure or retrofit of the impoundment and the development of the new alternative disposal capacities to ensure compliance with the CCR regulations.

The first group of compliance documents required to be included in the Demonstration are related to documentation of the facility's current compliance with the requirements governing groundwater monitoring systems. The Agency required copies of the following documents: (1) Map(s) of groundwater monitoring well locations (these maps should identify the CCR units as

well); (2) Well construction diagrams and drilling logs for all groundwater monitoring wells; (3) Maps that characterize the direction of groundwater flow accounting for seasonal variation; (4) Constituent concentrations, summarized in table form, at each groundwater monitoring well monitored during each sampling event; and (5) Description of site hydrogeology including stratigraphic cross-sections. 40 C.F.R. § 257.103(f)(1)(iv)(B)(*2*)-(*4*).

The second group of documents EPA required was the facility's corrective action documentation, if applicable, and the structural stability assessments. A facility must submit the following documentation: the corrective measures assessment required at 40 C.F.R. § 257.96, progress reports on remedy selection and design; the report of final remedy selection required at 40 C.F.R. § 257.97(a); the most recent structural stability assessment required at 40 C.F.R. § 257.73(d), and the most recent safety factor assessment required at 40 C.F.R. § 257.73(e). 40 C.F.R. § 257.103(f)(1)(iv)(B)(*5*) through (*8*).

1. CCR Pile

The CCR Rule prohibits placing CCR in a unit that is required to close; considering this placement a "beneficial use" is irrelevant

Based on information provided in IPL's Updated Closure Plan, it appears that IPL intends to place CCR materials in the OGS Ash Pond during closure. IPL considers this placement a "beneficial use" of CCR. The following quote from IPL's Updated Closure Plan is an overview of the steps that will be taken to close the OGS Ash Pond by capping with "waste in place:"

"Bottom Ash [BA] Pond:

- Dewatering of BA Pond (following completion of bottom ash handling system and diversion of low volume wastewater flows to LVWTP),
- Fly ash stockpile is to be used as beneficial use and CCR removed from ZLD Pond as fill in BA Pond,

- CCR material will be spread throughout the footprint of the BA Pond,
- Grading of CCR material to final slopes for drainage,
- Installation of cover system materials,
- Installation of drainage control features and,
- Implementing required groundwater monitoring program."

In the preamble to EPA's March 15, 2018 Phase 1 Proposed Amendments[9] to the CCR Rule EPA discusses the use of CCR in closure in units that are required to close:

> "The current CCR rules require that certain units must close for cause, as laid forth in § 257.101(a)–(c). As written, the regulation expressly prohibits ''placing CCR'' in any units required to close for-cause pursuant to § 257.101…. Note that the rule does not distinguish between placement that might be considered beneficial use and placement that might be considered disposal. All further placement of CCR into the unit is prohibited once the provisions of § 257.101 are triggered."

IPL's claim that the placement of CCR in the OGS Ash Pond is a beneficial use is irrelevant because the regulation does not distinguish between placement that might be considered beneficial use and placement that might be considered disposal for units that are required to close.[10] Therefore, EPA is proposing to conclude that IPL's Closure Plan is not compliant with 40 C.F.R. § 257.101(a), and that consequently, IPL has failed to meet the requirement to develop an adequate closure plan. 40 C.F.R. § 257.102(b).

2. Closure of OGS Ash Pond

The regulations provide two options for closing a CCR unit: closure by removal and closure with waste in place. 40 C.F.R. § 257.102(a). Both options establish specific performance standards. 40 C.F.R. § 257.102(c)-(d). IPL intends to close the OGS Ash Pond by closing with

[9] 83 FR 11605

[10] Even though it is not relevant for purposes of determining compliance with 40 C.F.R. § 257.101(a), EPA notes that IPL has not documented that the proposed activity meets the definition of a beneficial use at 40 C.F.R. § 257. 53.

waste in place. EPA evaluated the information provided in the Demonstration, as well as in the written closure plans and other documents posted on IPL's publicly accessible CCR website for the OGS Ash Pond. After review of this information, EPA is proposing to determine that IPL has not documented how the closure performance standards will be achieved. There are no details in the closure plan posted on IPL's CCR website or any other document provided as part of the Demonstration that will allow EPA to determine that the closure performance standards will be met, in light of site conditions, at the impoundment. Therefore, EPA is proposing to conclude that IPL has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. §§ 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

EPA reviewed available information to determine whether any portion of the OGS Ash Pond is in contact with groundwater and, if so, whether IPL has explained how the closure performance standards will be achieved for the impoundment. EPA also considered information in the Demonstration and its appendices, as well as the History of Construction, the 2020 Closure Plan, the Location Restriction Compliance Demonstration (October 2020), and the 2019 Annual GWMCA Report. After reviewing this information, EPA is preliminarily determining that the OGS Ash Pond is in contact with groundwater.

(a) Intersection between OGS Ash Pond and Groundwater

The following information corroborates the conclusion that the CCR in the OGS Ash Pond intersects with groundwater. First, groundwater elevations have been measured above the bottom of the OGS Ash Pond, at levels high enough to intersect with the CCR in the impoundment. Second, although clay is present beneath the unit, it is unlikely to act as a confining layer that would prevent groundwater from rising to the level of the CCR. Thus, there is a possible means of hydraulic connectivity between the ash in the unit and the uppermost

aquifer. Third, characterizations of on-site wetlands indicate that there is a high water table in the vicinity of the OGS Ash Pond.

First, groundwater elevations have been measured above the base of the OGS Ash Pond and therefore, unless prevented by a constructed or natural barrier, groundwater could rise to the level of the ash. IPL's compliance documents indicate that the elevation of the base of the OGS Ash Pond ranges from about 656 feet to 675 feet. Groundwater flow maps included in the Demonstration indicate that the groundwater elevations measured across the OGS Ash Pond range from about 655 feet to 675 feet.[11] Additionally, in April 2019, the groundwater elevation in MW-304 was measured at 659 feet and the groundwater elevation in MW-305 was measured at 664 feet.[12] Because these elevations are higher than the base of the unit, these data indicate that, at least in some areas, ash is likely saturated with groundwater. These data also suggest that there is a high water table beneath the unit. This is consistent with Geologic Cross-Section A-A' provided in Appendix C6 to the Demonstration, which depicts the elevation of the base of the Ash Pond at about 656 feet and the groundwater potentiometric surface across the impoundment at about 664 feet.

Second, although clay is present beneath the unit, site-specific data indicate that it is unlikely to act as a confining layer that would prevent groundwater from rising to the level of the CCR. Based on the boring logs, the natural clay layer is not continuous in and around the OGS Ash Pond. The site boring logs indicate that clay does exist beneath the unit in some places around the unit. However, it is not present in MW-301 and MW-303.[13] Additionally, sieve analysis results show that boring 20, which is within the footprint of the OGS Ash Pond, is

[11] Demonstration, Appendix C3, Figures 1-4
[12] 2019 Annual GWMCA Report, January 2020, Appendix A1
[13] Demonstration, Appendix C6, Appendix B, Table F-1

comprised of 95% sand and 5% silt and clay.[14] These data suggest that the clay layer is not present in all locations in and around the OGS Ash Pond. If the clay layer is not continuous in the vicinity of the OGS Ash Pond, it cannot act as a confining layer that would prevent groundwater from rising to the level of the ash. Additionally, site data indicate that where it is present, the clay layer is thin. Figure 4, Geologic Cross Section A-A' indicates that the clay layer beneath the bottom of the ash pond is less than a foot thick.[15] This suggests that the clay beneath the CCR unit, if present, is thin and not likely to prevent groundwater from rising to the level of the ash.

Third, characterizations of the wetlands on-site in the October 2020 Location Restrictions Compliance Demonstration indicate that there is a high water table and saturated bottom ash within and surrounding the OGS Ash Pond unit boundary. The OGS Ash Pond is underlain by palustrine emergent wetlands (PEM) and palustrine unconsolidated bottom (PUB) wetlands.[16] The report describes the hydrology of the PEM wetlands as, "standing water, a high water table, saturation…" The underlying material (substrate) of the PUB wetland is described as, "bottom ash or silt." The presence of these wetlands has been documented within the boundary of the OGS Ash Pond and the surrounding area.[17]

The presence of a high water table within and around the OGS Ash Pond is consistent with field observations.[18] Three sampling points within the OGS Ash Pond (SP-7, SP-13, SP-20) and two points near the unit boundary (SP-1, SP-16) found a high water table and soil saturation

---

[14] History of Construction, September 2016, Appendix D
[15] Assessment of Corrective Measures, September 2019, Figure 4, Geologic Cross-section A-A'
[16] Location Restriction Compliance Demonstration, October 2020, Appendix A, Appendix A, Figure A-4
[17] Location Restriction Compliance Demonstration, October 2020, Appendix A, Table 1 and Figure A-4.
[18] Location Restriction Compliance Demonstration, October 2020, Appendices A and B

at a depth of between 3 and 8 inches. Additionally, bottom ash is an underlying material of the PUB wetland, indicating that some of the bottom ash is saturated.

For these reasons, it appears that the high groundwater levels measured in wells surrounding the Ash Pond represent a high water table and that some CCR in the unit is in contact with groundwater.

(b) Compliance with the Closure Performance Standard

EPA evaluated the Demonstration and closure-related information on IPL's CCR website to determine whether IPL has adequately explained how the closure performance standards will be achieved during closure of the OGS Ash Pond in light of the evidence that at least a portion of the impoundment appears to be in contact with groundwater. EPA's preliminary determination is that the explanation is inadequate. EPA is therefore proposing to determine that IPL has failed to meet the requirement to develop an adequate closure plan and to demonstrate that the performance standards will be achieved during closure of the OGS Ash Pond. 40 C.F.R. § 257.102(b), (d)(1)-(2).

The CCR closure requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. 40 C.F.R. § 257.102(d). The general performance standards under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the

atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i). Finally, the regulations require facilities to develop a written closure plan that describes the steps necessary to close the CCR unit, consistent with recognized and generally accepted good engineering practices. 40 C.F.R. § 257.102(b)(1). The plan must also include a written narrative describing how the unit will be closed in accordance with the section, or in other words how the closure will meet the performance standards in the regulation. 40 C.F.R. § 257.102(b)(1)(i).

Neither the closure plan posted on IPL's website nor the Demonstration describe the steps that will be taken to close the unit consistent with generally recognized good engineering practices, as required by 40 C.F.R. § 257.102(b). Nor do either document that the closure of the OGS Ash Pond meets the requirements of 40 C.F.R. § 257.102. For example, the Demonstration provides insufficient details on how free liquids were to be eliminated from the OGS Ash Pond and the November 2020 closure plan for the OGS Ash Pond only states that the impoundment will be dewatered.[19] Such a summary discussion does not meet the requirements for a closure plan as laid out in 40 C.F.R. § 257.102(b). And if EPA is correct that the base of the OGS Ash Pond intersects with groundwater, the closure plan would need to have discussed the engineering measures taken to ensure that the groundwater had been removed from the unit prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the freestanding liquid in the impoundment and to all separable porewater in the

[19] "Closure Plan for CCR Surface Impoundments – Amendment No. 1." November 16, 2020. Page 2-1.

impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater.

Similarly, neither the Demonstration nor the closure plan document how the OGS Ash Pond will be closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the sides and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. In this scenario, the CCR will be in continuous contact with water. This contact between the waste and groundwater provides a similar potential for waste constituents to be dissolved and to migrate out of (or away from) the closed unit. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit. The

Demonstration does not discuss how this performance standard will be achieved for the OGS Ash Pond and the November 2020 closure plan for the impoundment only addresses the permeability characteristics of the final cover system with respect to this performance standard.[20]

In summary, EPA cannot determine based on information available whether the closure performance standards for the OGS Ash Pond will be met. This is a violation of 40 C.F.R. § 257.102(b), which requires facilities to develop a written closure plan that documents the steps that will be taken to complete closure and to ensure the performance standards are met. It may also demonstrate that IPL has failed to comply with the performance standards for closure with waste in place in 40 C.F.R. § 257.102(d). EPA is therefore proposing to determine that IPL has failed to comply with 40 C.F.R. § 257.102(b), and that IPL has not demonstrated compliance with the performance standards applicable to the closure of the OGS Ash Pond in 40 C.F.R. § 257.102(d)(1) and (2).

3. Groundwater monitoring compliance

The regulations require facilities to submit several groundwater monitoring compliance documents as part of their Demonstration so that EPA can thoroughly evaluate the groundwater monitoring network and the site hydrogeology for every CCR unit at the facility. EPA evaluated the documentation provided in the Demonstration and reviewed the 2017 through 2019 Annual GWMCA Reports and the September 2016 History of Construction for the OGS Ash Pond and for the ZLD Pond.

EPA is proposing to determine that the groundwater monitoring system at the downgradient boundary of the ZLD Pond does not meet the requirements of 40 C.F.R. § 257.91(a)(2), and that the Professional Engineer (P.E.) certification for the ZLD Pond

[20] *Id*. Page 3-1.

groundwater monitoring system fails to meet the requirements of 40 C.F.R. § 257.91(f). EPA is also proposing to determine that the Annual GWMCA Reports do not contain all information required by 40 C.F.R. § 257.90(e)(3), including groundwater elevation measurements, flow rate and direction, and statistical analyses. Finally, EPA is proposing to determine that the Alternative Source Demonstration (ASD) fails to meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

(a) Characterization of Downgradient Groundwater and P.E. Certification

40 C.F.R. § 257.91(a)(2) requires that a groundwater monitoring system be installed at the downgradient waste boundary that ensures detection of contamination, and that all potential contaminant pathways be monitored. The number, spacing, and depth of groundwater monitoring systems must be determined based upon site-specific technical information listed in 40 C.F.R. § 257.91(b). EPA is proposing to determine that the groundwater monitoring system at the ZLD Pond fails to monitor all potential pathways at the downgradient waste boundary, and that the number and spacing of wells is not supported by site-specific data. Additionally, EPA is proposing to determine that the P.E. certification obtained to comply with 40 C.F.R. § 257.91(f) fails to meet those requirements because it does not provide the basis for determining that one upgradient and three downgradient wells are sufficient to meet the requirements of 40 C.F.R. § 257.91.

Groundwater flow direction across the ZLD Pond is depicted as generally west to east, becoming slightly radial outward to the river at the downgradient boundary of the unit. The northeastern boundary is identified as downgradient. The ZLD Pond groundwater monitoring system consists of one upgradient background well (MW-301, the same well used for the OGS Ash Pond) and three downgradient wells (MW-307, MW-308 and MW-309).

EPA is proposing to determine that three downgradient wells are not sufficient to meet the requirements of 40 C.F.R. § 257.91(a)(2) at the ZLD Pond. It appears the downgradient boundary of the ZLD Pond is more than 2,000 feet in length. The groundwater monitoring wells located on the downgradient boundary are not evenly spaced; the distance between MW-308 and MW-309 appears to be approximately 1,000 feet. Even if it is determined that subsurface geology and groundwater flow conditions are extremely consistent, for the reasons discussed below, EPA is proposing to determine that IPL failed to demonstrate that the number and spacing of wells at the downgradient boundary of the ZLD Pond are sufficient to monitor all potential contaminant pathways in accordance with 40 C.F.R. § 257.91(a)(2).

The following explanation is provided in the groundwater system P.E. certification to support the determination that that the system meets the requirements of 40 C.F.R. § 257.91:

> "The minimum number of monitoring wells is appropriate at the OGS ZLDP for the following reasons:
>
> - Groundwater flow in the uppermost aquifer at the downgradient margin of the ZLDP is generally to the northeast.
> - Site geology is consistent along the downgradient edge of the ZLDP, based on the boring logs for the three downgradient wells.
> - The three downgradient monitoring wells are sufficient to reflect groundwater quality at the downgradient margin of the ZLDP."

A P.E. certification for a groundwater monitoring system with only one upgradient and three downgradient wells must explain how it meets requirements of 40 C.F.R. § 257.91. 40 C.F.R. § 257.91(f). EPA considers the above explanation to be insufficient for multiple reasons. First, it does not consider the size of the ZLD Pond, the length of the downgradient boundary, or any information about construction of the ZLD Pond (e.g., lined or unlined). It does not consider any of the site-specific data required under 40 C.F.R. § 257.91(b) (e.g., groundwater flow rate, hydraulic conductivities, geologic unit and fill materials, stratigraphy, or porosities and effective

porosities), except for noting the general direction of groundwater flow. These criteria are required to be considered in design of a groundwater monitoring system. 40 C.F.R. § 257.91(b).

Second, it does not discuss any specific requirements of 40 C.F.R. § 257.91, such as the requirement to accurately characterize the quality of groundwater passing the waste boundary of the unit and monitor all potential contaminant pathways. 40 C.F.R. §§ 257.91(a)(2), (c)(2). The P.E. certification for the ZLD Pond says only that three wells will "reflect groundwater quality at the downgradient margin." The basis for this determination is not provided in the P.E. certification, nor is any basis for the conclusion that all potential contaminant pathways are monitored. Therefore, this P.E. certification lacks the explanation required by 40 C.F.R. § 257.91(f).

Third, the conclusion in the P.E. certification that site geology is consistent along the downgradient edge of the ZLD Pond is not supported by site-specific data. To support this certification, well construction diagrams and boring information are provided in the Demonstration for three wells: MW-307, MW-308, and MW-309.[21] Three borings are not sufficient information to draw conclusions about the subsurface geology along a unit boundary that is 2,000 feet long. Even if it were true that geology is consistent along the downgradient boundary, this fact would not support the determination that three downgradient wells are sufficient to meet the performance standard in 40 C.F.R. § 257.91(a)(2), including to monitor all potential contaminant pathways along the 2,000-foot downgradient ZLD Pond boundary.

(b) Annual GWMCA Reports

[21] Demonstration, PDF p. 108

40 C.F.R § 257.90(e)(3) requires that the Annual GWMCA Report contain "all the monitoring data obtained under [40 C.F.R.] §§ 257.90 through 257.98." 40 C.F.R. § 257.93(e) requires the measurement of groundwater elevation in each well, each time it is sampled. It also requires calculation of groundwater flow rate and direction during each sampling event. While groundwater flow maps were provided in the Demonstration for data collected during sampling events in 2019 and 2020, the required information was not included in any Annual Groundwater Reports for those years or years prior. EPA is proposing to determine that the 2017 through 2019 Annual GWMCA Reports for all CCR units failed to meet this requirement.

Additionally, IPL has not provided statistical analyses or any detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, normality test results) in the Annual GWMCA Reports for either the OGS Ash Pond or the ZLD Pond. As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3). It is IPL's responsibility to demonstrate that it is in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents EPA, the state, or other stakeholders from evaluating compliance. EPA cannot determine whether the approach used by IPL complied with the requirements of 40 C.F.R. §§ 257.93 and 257.95 because the statistical analysis conducted is not included in the Annual GWMCA Reports.

(c) Alternative Source Demonstration (ASD)

If it is determined that there was a statistically significant level (SSL) above a groundwater protection standard for one or more of the constituents in Appendix IV to 40 C.F.R. part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD to show that a source other than the unit was the cause of the SSL. 40 C.F.R. §

257.95(g)(3). If a successful ASD for an SSL is not completed within 90 days, an assessment of corrective measures must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSL. In order to rebut the site-specific monitoring data and analysis that resulted in an SSL, an ASD requires conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

At the ZLD Pond, cobalt was detected at MW-307 at an SSL above the groundwater protection standard in December 2019, February 2020, and April 2020. An ASD was completed in October 2020 and concluded that the OGS Ash Pond was the source of the cobalt SSLs. The reasons provided for this conclusion include groundwater flow direction, spatial distribution of detected cobalt concentrations, and types of wastes historically discharged to the Ash Pond and the ZLD Pond. EPA is proposing to determine that IPL failed to conduct an ASD for SSLs detected in December 2019 and February 2020 within the deadline in 40 C.F.R. § 257.95(g)(3)(i) and is therefore subject to corrective action requirements at the ZLD Pond and has failed to complete an Assessment of Corrective Measures (ACM). EPA is also proposing to determine that the ASD ultimately conducted for cobalt SSLs at the ZLD Pond failed to meet the requirement of 40 C.F.R. § 257.95(g)(3)(ii).

Laboratory analysis for the groundwater sampling event in December 2019 were reported to IPL on December 23, 2019. Statistical analysis of the results to determine whether an SSL occurred was required within 90 days, or no later than March 23, 2020, in accordance with 40 C.F.R. § 257.93(h)(2). If the statistical analysis was completed on the last day allowed by the regulations, IPL would have been required to complete an ASD or initiate an ACM within 90 days, no later than June 21, 2020, in accordance with 40 C.F.R. § 257.95(g)(3). No ASD was

conducted by that date to demonstrate the SSL from the December 2019 were from a source other than the ZLD Pond. 40 C.F.R. § 257.96(a) allows 90 days to complete an ACM, which would result in a deadline of September 19, 2020; however, no ACM was completed for the ZLD Pond. Thus, EPA is proposing to determine that the ZLD Pond is subject to corrective action requirements and has failed to complete an ACM for this unit in accordance with 40 C.F.R. §§ 257.95(g)(3) and 257.96(a).

Ultimately, an ASD was completed on October 12, 2020, to address SSLs that occurred in December 2019, February 2020, and April 2020. The ASD claims that, while MW-307 is downgradient from a small portion of the ZLD Pond, it is primarily downgradient from a portion of the OGS Ash Pond. The ASD states that Figure 3[22] depicts MW-307 as downgradient from OGS Ash Pond monitoring wells MW-305 and MW-306, where cobalt has also been detected at SSLs. In fact, Figure 3 does not depict MW-307 as primarily downgradient from the Ash Pond instead of the ZLD Pond. Figure 3 also does not depict MW-307 as downgradient from MW-305, based on depicted groundwater flow direction. It does depict MW-307 as downgradient of MW-306, with a portion of the ZLD Pond between them. However, cobalt detections at MW-307 from December 2019 through April 2020 ranged from 10 to 20 µg/L. This is higher than the cobalt detections at MW-306 during this time, which ranged from 5.5 to 6.2 µg/L. Therefore, cobalt levels at MW-306 could not have been the primary cause of the SSL at MW-307. The ASD does not discuss contributions among different sources of contamination. It appears cobalt levels at MW-307 were high enough that an SSL would have been detected, demonstrating a release from the ZLD Pond, regardless of any contribution from MW-306.

[22] Demonstration, Appendix C, PDF p. 436

The ASD further contends that a lack of cobalt SSLs from other downgradient monitoring wells at the ZLD Pond is evidence that the SSL detected in MW-307 must come from an alternative source and not the ZLD Pond. This is not evidence of an alternative source. Wells located at the downgradient boundary monitor different contaminant pathways and there is no reason to believe the results at one downgradient well necessarily predict the results in a different downgradient well. Moreover, the regulations require that corrective action must be conducted when an SSL is detected at a single downgradient well. 40 C.F.R. § 257.95(g).

Finally, the ASD claims that historical use of the CCR units indicate that a cobalt exceedance is more likely to come from the Ash Pond than the ZLD Pond due to the types of waste streams disposed in each unit and the cobalt content of those waste streams. No data or information are provided to substantiate which waste streams were disposed of in which CCR unit, or the chemicals contained in those waste streams. Even if that information had been provided and the cobalt contained in each unit could be theoretically calculated, and potential cobalt releases calculated, this theoretical information would not be sufficient to rebut the site-specific monitoring data and analysis that resulted in detection of an SSL.

EPA is proposing to determine that the ASD conducted for the ZLD Pond did not demonstrate the SSL of cobalt at MW-307 was from an alternative source, because the lines of evidence provided are not sufficient to support the ASD. Because of this, and because the December 2019 SSL triggered corrective action requirements before an ASD was completed, EPA is also proposing to determine that corrective action requirements apply to the ZLD Pond. The Demonstration indicates that the ZLD Pond was scheduled to begin closure in spring 2021. However, this does not relieve IPL of the obligation to characterize the nature and extent of the

release and site conditions, sufficient to assess corrective measures that may be needed to comply with 40 C.F.R. § 257.97.

4. Corrective action compliance

Cobalt was detected at SSLs at MW-306 in April and October 2019, and in April, June, and October 2020. For this reason, IPL is subject to corrective action requirements at the OGS Ash Pond. An ACM was completed in September 2019, a public meeting was held in June 2020 and a Remedy Selection Report was completed in September 2020. However, the ACM was revised in November 2020, because "[n]ew information was received following issuance of the Selection of Remedy report, resulting in this addendum to the ACM (Addendum No. 1)."[23] This was included as Appendix C to the Demonstration. The Addendum No. 1 to the ACM ("revised ACM") states that another public meeting will be held, and a revised Remedy Selection Report will be issued. The Agency has reviewed the revised ACM for the purposes of this compliance review.

EPA is proposing to determine that IPL has failed to comply with several corrective action requirements at the OGS Ash Pond. First, characterization of the release and of relevant site conditions that may affect the remedy ultimately selected is insufficient to support an ACM, as required by 40 C.F.R. § 257.95(g) and 40 C.F.R. § 257.96(a). Second, the assessment that was conducted does not consider all of the criteria in 40 C.F.R. § 257.96(c). Third, portions of the assessment contain inaccurate statements, lack supporting data, or apply assessment criteria inconsistently. This results in an assessment that does not seem to accurately reflect the corrective measure's "effectiveness in meeting all of the requirements and objectives" in 40

[23] Revised ACM, p. iii

C.F.R. § 257.97(b), as required by 40 C.F.R. § 257.96(c). Finally, the discussion of schedule in section 4 of the revised ACM is inaccurate and conflicts with information in other parts of the report.

(a) Characterization of the release and relevant site conditions

The ACM must include site-specific data to characterize the nature and extent of the release and any relevant site conditions that may ultimately affect the remedy selected. 40 C.F.R. § 257.95(g)(1). The characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary to effectively clean up releases from the CCR unit. Id. See also, 40 C.F.R. § 257.96 (a), (c). This characterization requires gathering of data, laterally and vertically, to quantify the levels at which constituents are present, quantifying the estimated mass of the release and installing at least one well at the facility boundary in the direction of contaminant migration. Id.

Cobalt has been detected at an SSL at MW-305, which indicates a release has occurred from the OGS Ash Pond. Additional wells were installed to characterize the release laterally (MW-310, MW-311) and vertically (MW-305A, MW-310A, MW-311A). However, based on depicted flow direction, MW-310 and MW-310A do not appear to be directly in a groundwater flow path downgradient from MW-305, and are only likely to monitor a small fraction of any contamination flowing downgradient from MW-305.[24] MW-311 and MW-311A are even farther away and less directly downgradient; they are also separated from the CCR units by Middle Avery Creek, which could influence groundwater flow direction or create a groundwater flow divide. There are no groundwater elevation data to characterize groundwater flow direction

[24] Demonstration, Addendum No. 1, Figures 5 and 6.

between MW-311/MW-311A and the ash pond, so the influence of Middle Avery Creek on groundwater flow direction is unknown. Wells MW-311 and MW-311A are not placed in locations that are effective to adequately characterize groundwater downgradient from MW-305, because the groundwater flow direction depicted does not indicate there is a flow path from MW-305 to MW-311 and MW-311A. Two additional wells are planned to be installed between MW-305 and MW-310, at 400-foot spacing, to improve lateral characterization of the release and site conditions in this area; these wells are needed to characterize the nature and extent of the release.

The revised ACM does not contain data to characterize relevant site conditions that may ultimately affect the remedy selected, in accordance with 40 C.F.R. § 257.95(g)(1), but it does identify such data yet to be gathered and explains how that data will be used to assess corrective measures. These include geochemical parameters obtained through field measurements (e.g., specific electrical conductance, turbidity, ferrous iron and sulfide) as well as laboratory analyses (e.g., alkalinity, chlorides, sulfates, and filtered geochemical parameters) that will provide a better understanding of groundwater chemistry affecting cobalt. Samples of saturated sand from within the plume will be collected for analysis of iron and manganese, as well as for cobalt to determine whether adsorption of cobalt is occurring and assess the potential for its adsorption in the aquifer matrix.[25] The revised ACM also details plans to analyze groundwater samples filtered at different filter sizes, as well as to analyze the filtrate. This will provide a better understanding of the nature of the cobalt released and identify whether chemicals are present in the aquifer that could react with it to result in compounds that will remain immobilized in the sand, unable to

[25] Revised ACM, pp. 7-8

travel in groundwater to downstream receptors. EPA believes this investigation is appropriate to characterize site conditions that may affect the remedy ultimately selected.

Section 3.3.1 of the ACM states that lithium and fluoride were detected above groundwater protection standards at new groundwater monitoring wells (MW-310, MW-310A, and MW-311) installed in accordance with 40 C.F.R. § 257.95(g) (i.e., nature and extent wells). The ACM states that these values have not yet been determined to be statistically significant. However, statistical analyses of the results from nature and extent wells are not required to characterize the release. The references in 40 C.F.R. § 257.95(g)(1)(iii) and (iv) to 40 C.F.R. § 257.95(d)(1) regarding the number of samples required during each semiannual sampling event only apply to groundwater monitoring wells installed in accordance with 40 C.F.R. § 257.91, not nature and extent wells. An SSL in assessment monitoring serves as statistical confirmation that a release from the CCR unit has occurred; reconfirming this at each downgradient monitoring point monitored within the groundwater contamination plume would unnecessarily delay the corrective action process. Therefore, statistical analysis for Appendix IV constituents in the characterization of the nature and extent of the release is not required or necessary. Additionally, it would not likely be feasible within the time frame allowed by the CCR regulations to complete the ACM.

Finally, the revised ACM evaluates the stability of the cobalt plume using a Mann-Kendall trend test. The stability of a contaminant plume must be demonstrated by site-specific data. Modeling may complement site-specific data, but it cannot replace it. The revised ACM goes on to say that additional investigation is warranted to increase the understanding of

contributing factors to attenuation and to provide the basis for a long-term corrective action monitoring program[26].

EPA expects that the data planned to be gathered, discussed previously, should be sufficient to support assessment of the alternatives according to the criteria in 40 C.F.R. § 257.96(c). However, the data are required to be included in the ACM and considered in the assessment of corrective measures. 40 C.F.R. §§ 257.95(g)(1), 257.96 (a), (c). Because it is not, the ACM fails to comply with these requirements.

(b) Assessment criteria

The revised ACM assesses the ability of alternatives to meet the requirements in 40 C.F.R. § 257.97(b) according to criteria in 40 C.F.R. § 257.97(c), rather than 40 C.F.R. § 257.96(c). Although these criteria are similar, the assessment[27] lacks an evaluation of cross-media impacts of the alternatives, as required by 40 C.F.R. § 257.97(c)(1).

(c) Quality of assessment

The revised ACM contains conclusions that are unsupported by data, that result from inconsistent application of the criteria, or that are based on inaccurate statements. These portions of the assessment do not seem to accurately reflect the control measure's "effectiveness in meeting all of the requirements and objectives" in 40 C.F.R. § 257.97(b) based on information in the ACM. Conclusions without supporting data do not constitute an analysis of this effectiveness. Further, inaccurate assessments in an ACM can ultimately result in selection of a remedy that will not meet the requirements of 40 C.F.R. § 257.97(b).

---

[26] Revised ACM, p. 7

[27] Revised ACM, section 6.2 through 6.7 and Table 5

(i) Lack of data to support conclusions about monitored natural attenuation (MNA)

MNA refers to reliance on natural attenuation processes to achieve corrective action objectives within a time frame that is reasonable compared to that offered by other, more active methods. The "natural attenuation processes" at work in such a remediation approach generally include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater.[28]

Mass reduction through degradation generally is not a viable process for most inorganic contaminants in groundwater, except for radioactive decay. Constituents in Appendix IV to part 257 are atoms, and atoms do not break down or degrade through any naturally occurring process unless they are radioactive. Thus, while MNA can reduce the aqueous concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils, it does not remove the contaminants from the environment. MNA, therefore, would not be assessed favorably in either the ACM or any remedy selection report with respect to 40 C.F.R. § 257.97(b)(4), which requires that remedies "remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible."

Inorganic contaminants persist in the subsurface because, except for radioactive decay, they are not degraded by the other natural attenuation processes.[29] However, inorganic contaminants may exist in forms that have low mobility, toxicity, or bioavailability such that

[28] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 3

[29] This is in contrast to organic compounds, comprised of multiple elements, which may react or degrade to its constituent elements or to form other, less harmful compounds.

they pose a relatively low level of risk. Therefore, natural attenuation of inorganic contaminants is most applicable to sites where immobilization is demonstrated to be in effect and the process/mechanism is irreversible.[30] In this way, MNA can reduce the aqueous concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils. Immobilization that is not permanent would require ongoing monitoring in accordance with 40 C.F.R. § 257.98(a)(1) as long as immobilized constituents remain in the aquifer matrix.

Dilution and dispersion reduce concentrations through dispersal of contaminant mass rather than destruction or immobilization of contaminant mass.[31] Consequently, these mechanisms do not meet the requirement at 40 C.F.R. § 257.97(b)(4) to remove from the environment as much of the contaminated material as is feasible, and they may not meet the requirement at 40 C.F.R. § 257.97(b)(1) to be protective of human health and the environment. Note that this is consistent with EPA's long-standing policy that dilution and dispersion are generally not appropriate as primary MNA mechanisms.[32]

In order to conduct the assessment required by 40 C.F.R. § 257.96(c), evaluation of MNA as a corrective measure requires analysis of site-specific data and characteristics that control and sustain naturally occurring attenuation. "It is necessary to know what specific mechanism (e.g., what type of sorption or reduction and oxidation reaction) is responsible for the attenuation of inorganics so that the stability of the mechanism can be evaluated. [...] Changes in a

---

[30] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 9
[31] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14
[32] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14

contaminant's concentration, pH, oxidation and reduction potential (ORP), and chemical speciation may reduce a contaminant's stability at a site and release it into the environment."[33] Determining the existence, and demonstrating the irreversibility, of MNA mechanisms is necessary to evaluate the performance, reliability, ease of implementation, and the time required to begin and complete the remedy. See 40 C.F.R. § 257.96 (c)(1) and (c)(2). This information would ultimately be necessary to show that MNA meets the requirements of 40 C.F.R. § 257.97(b).

MNA is included in alternatives 2 through 5 of the revised ACM. The assessment of MNA is based on possible immobilization of cobalt through adsorption onto sand in the aquifer. As discussed above, the ACM does not include site-specific evidence that supports a conclusion that cobalt is adsorbing to the aquifer matrix at this site. In the absence of such data, MNA through immobilization should necessarily be assessed poorly with respect to certain criteria (e.g., performance, reliability.)

The revised ACM does not contain sufficient site-specific evidence to support the assessment on MNA through immobilization. The revised ACM[34] cites as evidence the fact that if cobalt were not attenuated, it would be detected in MW-310, based on the rate of groundwater movement from the OGS Ash Pond to well MW-310 and the approximate 40-year operational history of the OGS Ash Pond. The revised ACM claims that the significant decrease in cobalt concentration from MW-305 to MW-310 supports the conclusion that attenuation is occurring.

[33] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 8

[34] Revised ACM, p. 6 and p. 1 of Appendix C

The revised ACM also notes that dilution by mixing with an upward flow of deep groundwater at MW-310 may be a factor in the decrease of cobalt concentrations beyond MW-305.

Even if it were correct to assume that the OGS Ash Pond has been leaking since it began operation, this analysis does not support a favorable assessment of MNA. As discussed previously, MW-310 does not appear to be located on a groundwater flow path directly downgradient of MW-305, and so it may not be properly placed to delineate the release of cobalt. Additional wells are needed. This fact, combined with the possibility that some of the reduction in cobalt results from dilution due to an upward vertical groundwater flow gradient[35] and a lack of site-specific data to support the discussion of MNA through immobilization,[36] means it is not clear whether any decrease in cobalt concentration is due to immobilization, dilution and dispersion, or poor characterization of the release.

Appendix C of the revised ACM contains discussion of MNA that is not based on site-specific data. For example, a literature value for the typical ionic state of cobalt found in nature (2+) is noted, and it is explained that in this state, cobalt could react and precipitate in conditions with oxidation reduction potential between -100 and -400 millivolts (mV). The monitoring data presented[37] indicate these conditions have only been detected at MW-304. Additionally, it is not reasonable to assume that conditions at a CCR unit with a detected release are the same as naturally occurring conditions, because released constituents may cause chemical reactions to occur that change groundwater chemistry. In another example, the discussion of hydrogeology[38]

---

[35] Revised ACM, p. 7
[36] Revised ACM, Appendix C
[37] Demonstration, Appendix C, Table 2
[38] Demonstration, Appendix C, p. 1

relies on estimated groundwater flow rates based on porosity, rather than the calculated groundwater flow rates based on site-specific measurements required by 40 C.F.R. § 257.93(c).

To assess MNA, attenuation mechanisms (i.e., immobilization vs. dilution and dispersion) must be identified in order to assess ability to meet the requirements of 40 C.F.R. § 257.97(b). Different mechanisms would be assessed differently according to criteria in 40 C.F.R. § 257.96(c). For example, dilution and dispersion would be assessed poorly with respect to cross-media impacts, because it would result in migration of the release to the Des Moines River. For these reasons, decreasing concentration between MW-305 and MW-310 is not, by itself, sufficient data to support a favorable assessment of MNA.

(ii) Inconsistent application of criteria

As discussed in Section E.2 of this document, EPA has preliminarily determined that the base of the OGS Ash Pond at least partially intersects with groundwater; therefore, EPA preliminarily concludes that lateral migration of the groundwater into the ash, in addition to the vertical migration from precipitation, is occurring.[39] This infiltration allows contaminants in the CCR to leach into the groundwater, causing releases from the unit. Despite this, all alternatives that include on-site disposal are assessed generally the same, regardless whether the CCR remains in contact with groundwater. Source control alternatives that will remove CCR from groundwater (alternatives 4, 5) must be assessed more favorably than alternatives that fail to do so (alternatives 1, 2, 3, 6, 7, 8) with respect to performance, reliability, and control of exposure to residual contamination (i.e., CCR left in the ground). 40 C.F.R. § 257.96(c)(1), 40 C.F.R. § 257.97(c)(1)(ii).

[39] Revised ACM, Figure 3.

The assessment in Table 5 of the revised ACM attributes equal reduction of risks under criteria in 40 C.F.R. § 257.97(c)(1)(i) to alternatives 2, 3, and 4. However, alternative 4 achieves a significantly greater reduction of risk by removing CCR from the aquifer and placing it in a lined disposal unit above the aquifer, compared to alternatives 2 and 3, which allow CCR to remain in contact with groundwater in an unlined disposal unit. Therefore, alternative 4 must be assessed more favorably than alternatives 2 and 3 under this criterion. Additionally, alternative 7 is assessed less favorably than alternative 2 because it is claimed that a pump-and-treat system brings contaminated groundwater to the surface, increasing the potential for exposure.[40] This assessment underestimates the risk reduction achieved by alternative 7 for two reasons. First, consolidation of CCR prior to closure reduces the footprint of CCR in the water table, making alternative 7 at least slightly more protective. Second, it ignores the risk reduction achieved by the groundwater pump-and-treat system when it removes cobalt from the environment. Since cobalt does not degrade naturally, as explained above, this removal prevents its migration to the river and ultimately to downgradient receptors. Alternative 7 should be assessed more favorably than alternative 2 under this criterion.

Alternatives with significantly different source control approaches were assessed similarly in Table 5 with respect to criteria in 40 C.F.R. § 257.97(c)(1)(ii), "The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of…Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy…" The assessment in Table 5 appears to be based upon the assumption that because no receptors have been identified, there is no risk from continued releases of inorganic metals to

[40] See revised ACM Table 5, 40 C.F.R. § 257.97(c)(1)(i).

the aquifer and ultimately to the Des Moines River, so all alternatives are equivalent. As discussed previously, the release has not been sufficiently characterized and the impacts of contaminated groundwater on the Des Moines River have not been characterized. Also, cobalt will persist in the environment because it will not degrade. Alternatives that are likely to prevent future releases can be distinguished from those that are not and assessed accordingly. The requirement to assess their relative performance under this criterion is not negated by an unsubstantiated claim that no receptors are or will be impacted by the release. The presence or absence of immediate receptors is not a valid criterion for remedy selection.

Performance of corrective measures based on their potential need for replacement, the criterion in 40 C.F.R. § 257.97(c)(1)(viii), is not assessed consistently across alternatives and the assessments are unsupported or contradicted by information in the ACM. All alternatives except 1 and 5 are assessed similarly, despite significant differences. Barrier walls and groundwater extraction and treatment are proven technologies, therefore, alternatives 7 and 8 should be assessed significantly more favorably than alternatives 2 through 4, for which there is a lack of supporting data to demonstrate that MNA is occurring at this site for cobalt. This makes MNA an unproven technology at this site for cobalt.

The assessment of expected operational reliability of alternatives 2 through 5 according to 40 C.F.R. § 257.97(c)(3)(ii) is unsupported by data or analysis. The reliability of alternatives 2 through 5, which include MNA as a primary element, must be assessed less favorably than for approaches that are known to be reliable. This is because no data or analysis is provided to demonstrate immobilization mechanisms are occurring for cobalt at the site or how permanent they may be. While the reliability of the source control portion of alternative 7 may be low to moderate, given the uncertainty about whether CCR will remain in the water table, a properly

maintained and operated pump-and-treat system is a reliable technology compared to unconfirmed MNA through immobilization. The relative assessments must reflect that.

(iii) Inaccurate statements

The ACM contains inaccurate statements that affect conclusions regarding the effectiveness of corrective measures. For example, the discussion of alternatives in Section 5 states, "With the exception of the No Action alternative, each of the corrective measure alternatives meet the requirements in 40 C.F.R. § 257.97(b)(1) through (5) based on the information available at the current time." This statement is inconsistent with facts presented in other sections of the ACM. For example, alternative 2 would leave CCR in continued contact with groundwater,[41] allowing constituents to continue to leach from the CCR into groundwater. This would not control the source of the release(s) to reduce or eliminate, to the maximum extent feasible, further releases, as required by 40 C.F.R. § 257.97(b)(3).

In another example, the assessment of alternative 8 in Table 5 incorrectly identifies the requirement in 40 C.F.R. § 257.97(b)(4) as "not applicable." Section 3.3.2 of the revised ACM explains that "No releases of CCR have been identified from the OGS ash pond." In fact, the SSLs of cobalt are evidence of a release from the OGS Ash Pond, therefore, the requirement in 40 C.F.R. § 257.97(b)(4) is applicable. This is particularly relevant for alternative 8, because a barrier wall would not typically remove contamination from the environment, it would only serve to keep contamination from migrating beyond the property.

Because the revised ACM contains conclusions that result from inconsistent application of the criteria, that are based on inaccurate statements, and that are unsupported by data about

[41] Revised ACM, Figure 3

MNA, EPA is proposing that IPL has failed to comply with the requirements in 40 C.F.R. § 257.96. The revised ACM does not assess the corrective measures in a manner that provides an appropriate basis to select a remedy. The assessment of control measures must be based on accurate characterization of the requirements of 40 C.F.R. § 257.97 and consistent application of, at a minimum, the criteria in 40 C.F.R. § 257.96(c) to all control measures. The assessment of all control measures, including MNA, must be based on site-specific data that support conclusions about their performance.

IV. Proposed Date to Cease Receipt of Waste

EPA is proposing that Ottumwa must cease receipt of waste within 135 days of the date of the Agency's final decision establishing the revised deadline (i.e., the date on which the decision is signed). EPA is further proposing that, under certain circumstances described below, EPA could authorize additional time for Ottumwa to continue to use the impoundment to the extent necessary to address demonstrated grid reliability issues, if any, provided that Ottumwa submits a planned outage or suspension request to Midcontinent Independent System Operator, Inc.(MISO) within 15 days of the date of EPA's final decision and Ottumwa provides the MISO request to reschedule the planned outage or suspension and the formal reliability assessment upon which it is based to EPA within 10 days of receiving them.

The regulations state that when EPA denies an application for an extension, the final decision will include the facility's deadline to cease receipt of waste, but they do not provide direction on what the new deadline should be. 40 C.F.R. § 257.103(f)(3). EPA is proposing to set a new deadline for Ottumwa to cease receipt of waste that would be 135 days from the date of the final decision on Ottumwa's Demonstration. This would provide Ottumwa the same amount of time that would have been available to the facility had EPA issued a denial immediately upon

the regulatory deadline for receipt of the Demonstration (i.e., from November 30, 2020, to April 11, 2021, the regulatory deadline to cease receipt of waste). This amount of time thus puts the facility in the same place it would have been had EPA immediately acted on the Demonstration and therefore adequately accounts for any equitable reliance interest Ottumwa may have had after submitting its Demonstration. Moreover, as discussed further below, this date should provide Ottumwa with adequate time to coordinate with MISO for any outage or suspension of the coal-fired boiler that may be necessary.

Given that this proposed deadline (135 days from the date of EPA's final decision) is sooner than the deadline requested by Ottumwa, it is likely that the coal-fired boiler associated with the CCR unit will temporarily need to stop producing waste (and therefore power) until either construction of an alternative disposal option is completed and commercially operational or some other arrangements are made to manage its CCR and/or non-CCR wastestreams.

In Ottumwa's Demonstration it is noted that "to continue to operate, generate electricity, and comply with both the CCR Rule and the IDNR permit conditions, OGS must continue to use the Surface Impoundment for treatment of non-CCR wastestreams until alternate disposal capacity can be developed." It further explains that if the OGS Ash Pond were unable to receive the facility's non-CCR wastestreams before construction of the LVWTP is complete, OGS would have to cease generating power. EPA does not have independent evidence showing that the temporary outage of the coal-fired boiler at this facility would affect the reliability of the grid.

This facility operates as part of the MISO system. MISO is a regional transmission organization (RTO) that is part of the Eastern Interconnection grid. MISO currently has excess generating capacity, and consequently, an adequate reserve margin. A reserve margin is a

measure of the system's generating capability above the amount required to meet the system's peak load.[42] MISO's target reserve margin[43] for the region for 2021 is 18.3%.[44] The anticipated reserve margin for 2021 is projected to be 21.6%.

The exceedance of MISO's existing target reserve margin, combined with scheduled new capacity coming online into the market and the ability to purchase electricity from facilities outside MISO, suggests that the temporary outage at Ottumwa Generating Station would not adversely affect resource adequacy requirements. EPA has not seen any information to indicate that an extended planned outage or suspension at Ottumwa Generating Station would trigger local reliability violations.[45] Additionally, especially with the advance notice, there are a wide array of tools available to utilities, system operators, and state and federal regulators to address situations where the outage or suspension of a generating unit might otherwise affect local electric reliability conditions.

Nonetheless, EPA is sensitive to the importance of maintaining enough electricity generating capacity to meet the region's energy needs, including meeting specific, localized issues. EPA understands that it is possible that in some instances temporarily taking any large generating units (including coal-fired units) offline could have an adverse, localized impact on

[42] Reserve margin is defined as the difference between total dependable capacity and annual system peak load (net internal demand) divided by annual system peak load.
[43] The target reserve margin, also known as the Installed Reserve Margin or the Reference Reserve Margin, is the "metric…used by system planners to quantify the amount of reserve capacity in the system above the forecasted peak demand that is needed to ensure sufficient supply to meet peak loads." The term used to describe this metric varies by assessment area. North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 41, https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.
[44] North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 42 (where "Reference" Reserve Margin Level refers to MISO's Installed Reserve Margin), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.
[45] A local reliability violation might occur, for example, if transmission line constraints limit the amount of power that can get to an area from plants outside that area.

electric reliability (e.g., voltage support, local resource adequacy), although Ottumwa has presented no evidence that such is the case with this facility.

If a generating asset were needed for local reliability requirements, the grid operator (e.g., MISO) might request the generator to reschedule the planned outage or suspension and offer a suggested alternative schedule. In such instances, the owners/operators of the generating unit could find themselves in the position of either operating in noncompliance with the Resource Conservation and Recovery Act (RCRA) or halting operations and thereby potentially causing adverse reliability conditions.

EPA is obligated to ensure compliance with RCRA to protect human health and the environment. Where there is a conflict between timely compliance and electric reliability, EPA intends to carefully exercise its authorities to ensure compliance with RCRA while taking into account any genuine, demonstrated risks to grid reliability identified through the process established by MISO that governs owner/operator requests for planned outages and/or suspension requests.[46] Accordingly, EPA is proposing to rely on established processes and authorities used by MISO to determine whether a planned outage or suspension necessary to meet the new deadline would cause a demonstrated reliability issue.

MISO is responsible for coordinating and approving requests for planned outages of generation and transmission facilities, as necessary, for the reliable operation of the MISO RTO.[47] In MISO, power plants are normally to submit a request at least 120 days in advance of a planned outage or 26 weeks in advance of a planned suspension to allow MISO to evaluate

---

[46] See, e.g., MISO Tariff, Module C, Energy and Operating Reserve Markets, Effective On: November 19, 2013 (Sections 38.2.5 and 38.2.7), available for download at https://www.misoenergy.org/legal/tariff/.

[47] See, MISO Outage Operations Business Practices Manual, BPM-008-r19, Effective Date: September 21, 2021, page 14, available for download at https://www.misoenergy.org/legal/business-practice-manuals/.

whether the resource is needed to maintain grid reliability, among other scheduling considerations. MISO will request the event be rescheduled if it determines that the planned outage or suspension would adversely affect reliability. If MISO approves a planned outage or suspension request, the outage may proceed and there would be no reason to expect that the outage would affect reliability. However, if a request would cause reliability issues, MISO will work with the generation owner to implement appropriate solutions. The MISO member may also request MISO's assistance in scheduling a planned outage.

MISO may rely on different bases in determining whether to request the generating facility to reschedule a planned outage. For example, a reschedule request may be issued because of timing considerations taking into account previously approved planned outage requests, in which case EPA would expect the plant owner to work with MISO to plan an outage schedule that can be approved by MISO and also satisfies the plant owner's RCRA obligations, without regard to any cost implications (e.g., in meeting any contractual obligations with third parties) that may result for the plant owner under a revised proposed outage schedule.

Alternatively, however, in some cases, MISO might determine that the planned outage or suspension could not occur without triggering operational reliability violations. In such cases, the system operator might determine that the generating unit would need to remain in operation until remedies are implemented. As set forth above, Ottumwa has presented no evidence that such is the case with this facility.

For Ottumwa, EPA is proposing to rely on MISO's procedures for reviewing planned maintenance outage and similar requests. Accordingly, EPA is proposing that, if MISO approves Ottumwa's request, EPA would not grant any further extension of the deadline to cease receipt of waste (i.e., the deadline would be 135 days from the date of EPA's final decision). If, however,

MISO requests that Ottumwa move its planned outage or requires alternative solutions to be implemented prior to an outage or suspension that exceeds the compliance timeline allowable under RCRA based on a technical demonstration of operational reliability issues, EPA is proposing that, based on its review of that decision and its bases, EPA could grant a further CCR extension (i.e., beyond 135 days from the date of EPA's final decision).

EPA is further proposing that such a request could only be granted if it were supported by the results of the formal reliability assessment(s) conducted by MISO that established that the temporary outage of the boiler during the period needed to complete construction of alternative disposal capacity would have an adverse impact on reliability. In such a case EPA is proposing that, without additional notice and comment, it could authorize continued use of the impoundment for either the amount of time provided in an alternative schedule proposed by MISO or the amount of time EPA determines is needed to complete construction of alternative disposal capacity based on its review of the Demonstration, whichever is shorter. EPA is further proposing that a request from MISO to move a requested outage or delay a suspension until other solutions are in place without a finding of technical infeasibility for demonstrated reliability concerns would not support EPA's approval of an extension of the date to cease receipt of waste because any concern about outage schedules and their implications for plant economics could be resolved without an extension of RCRA compliance deadlines (e.g., through provision of replacement power and/or capacity; rearranging plant maintenance schedules; reconfiguration of equipment).

To obtain an extension, EPA is proposing that Ottumwa must submit a request for an outage or suspension to MISO within 15 days of the date of EPA's final decision. To avoid the need for serial requests and submissions to MISO, EPA is proposing to require Ottumwa to

contact MISO and request assistance in scheduling the planned outage so that Ottumwa and MISO can determine the shortest period of time during an overall planned outage or suspension period in which the generating unit must be online to avoid a reliability violation. EPA expects that the plant owner and MISO would plan the outage(s) and return-to-service periods – and any other needed accommodations – in ways that minimize the period of actual plant operations.

Finally, to obtain an extension from EPA, Ottumwa must submit a copy of the request to MISO and the MISO determination (including the formal reliability assessment) to EPA within 10 days of receiving the response from MISO. EPA would review the request and, without further notice and comment, issue a decision.

One hundred and thirty-five days should normally provide adequate time to schedule a planned outage of a generating unit in coordination with MISO. According to the MISO Tariff, section 38.2.5 (at PDF page 628), the normal process for obtaining approval for a planned outage occurs within three months.[48] If a suspension is necessary, EPA expects the facility to work with MISO during the 135 days to try to obtain a decision. If the facility is unable to obtain a decision before the end of this period, upon a showing that the facility submitted a timely request to MISO, EPA would grant the additional time necessary for MISO to reach a decision. However, EPA solicits comment on whether 135 days from the date of the final decision provides sufficient time to accommodate the normal process of obtaining approval for a planned outage.

V. Conclusion

In conclusion EPA is proposing to deny IPL's request for an alternative compliance date for the OGS Ash Pond surface impoundment, located at the Ottumwa Generating Station near

[48] MISO Tariff, Effective On: November 19, 2013, available for download at https://www.misoenergy.org/legal/tariff/.

Ottumwa, Iowa. EPA is proposing to deny the extension request because IPL has not demonstrated that the facility is in compliance with all the requirements of 257 subpart D, based on concerns with the groundwater monitoring at the facility, with the facility's corrective action, and with the facility's closure plans. EPA is proposing that IPL cease receipt of waste and initiate closure no later than 135 days from the date of EPA's final decision.

Finally, due to the nature of the noncompliance EPA has preliminarily identified at IPL, EPA is proposing to issue a denial rather than a conditional approval. As discussed in greater detail in the proposed H.L. Spurlock Power Station decision, EPA is proposing that a conditional approval may be appropriate in situations where the actions necessary to bring the facility into compliance are straightforward and the facility could take the actions well before its requested deadline (or the alternative deadline that EPA has determined to be warranted). But in the case of IPL, the noncompliance EPA has identified involves more complicated technical issues, where the specific actions necessary to come into compliance cannot be easily identified and/or cannot be implemented quickly. Specifically, if EPA is correct that the base of the OGS Ash Pond intersects with groundwater, the determination of whether the closure of these units meets the performance standards in 40 C.F.R. § 257.102(d) is highly technical and extremely complicated. As explained in unit III.E.2, IPL provided insufficient information for EPA identify specific actions that would need to be taken at the site. Nor could EPA conclude that IPL could implement the necessary measures before its requested deadline. Finally, EPA continues to believe that where there is affirmative evidence of harm at the site, such as where a facility has delayed corrective action, EPA cannot grant additional time for the impoundment to operate without some evidence that these risks are mitigated.

VI. Effective Date

EPA is proposing to establish an effective date for the final decision on IPL's demonstration of 135 days after the date of the final decision (i.e., the date that the final decision is signed). EPA is proposing to align the effective date with the new deadline that EPA is proposing to establish for IPL to cease receipt of waste. EPA is doing so for all of the reasons discussed as the basis for proposing to establish the new deadline to cease receipt of waste discussed in Section IV of this document.

January 11, 2022
Date

Barry N. Breen
Acting Assistant Administrator

Attachment J

PROPOSED DECISION

Conditional Approval of an Alternative Closure Deadline for H.L. Spurlock Power Station, Maysville, Kentucky

SUMMARY:

The East Kentucky Power Cooperative, Inc. (EKPC) submitted a demonstration (the "Demonstration") to the U.S. Environmental Protection Agency (EPA) pursuant to 40 Code of Federal Regulations (C.F.R.) § 257.103(f)(1) requesting additional time to develop alternative capacity to manage coal combustion residuals (CCR) and non-CCR wastestreams at the H.L. Spurlock Power Station (Spurlock) near Maysville, Kentucky. EPA is proposing to conditionally grant the extension request from EKPC. If finalized, EPA's approval would allow EKPC to continue placing certain CCR and non-CCR wastestreams into the Spurlock Ash Pond until November 30, 2022, provided EKPC meets the conditions specified in the final conditional approval. The proposed conditions for approval are specified in Section IV.A of this document. The proposed decision is based on EPA's evaluation of the information provided in the Demonstration submitted by EKPC and other information in the docket for this action.

DATES: *Comments.* Comments must be received on or before February 23, 2022.

ADDRESSES AND PUBLIC PARTICIPATION: The EPA has established a docket for this proposed decision under Docket ID No. EPA-HQ-OLEM-2021-0595. The EPA established a separate docket for the CCR Part A final rule published on August 28, 2020, under Docket ID No. EPA-HQ-OLEM-2019-0172.[1] All documents in the docket are listed in the *https://www.regulations.gov* index. Publicly available docket materials are available either electronically at *https://www.regulations.gov* or in hard copy at the EPA Docket Center. The

[1] See Section II.A of this document for more information on the CCR Part A Rule.

Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742. You may send comments, identified by Docket ID. No. EPA-HQ-OLEM-2021-0595, by any of the following methods:

- Federal e-Rulemaking Portal: *https://www.regulations.gov* (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management, Docket ID No. EPA-HQ-OLEM-2021-0595, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier (by scheduled appointment only): EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. – 4:30 p.m., Monday – Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID number (EPA-HQ-OLEM-2021-0595) for this action. Comments received may be posted without change to *https://www.regulations.gov*, including any personal information provided. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system).

For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets*.

Due to public health concerns related to COVID-19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at *https://www.epa.gov/dockets*.

The EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

FOR FURTHER INFORMATION CONTACT:

- Frank Behan, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0531; email address: Behan.Frank@epa.gov, and/or
- Kirsten Hillyer, Office of Resource Conservation and Recovery (ORCR), Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0542; email address: Hillyer.Kirsten@epa.gov.
- For more information on EPA's coal ash regulations, please visit *https://www.epa.gov/coalash*.

SUPPLEMENTARY INFORMATION:

Table of Contents

List of Acronyms

ASD	Alternative source demonstration
CBI	Confidential business information
CCR	Coal combustion residuals
CDC	Centers for Disease Control and Prevention
C.F.R.	Code of Federal Regulations
CPCN	Certificate of Public Convenience and Necessity
D.C. Circuit	U.S. Court of Appeals for the District of Columbia Circuit
EKPC	East Kentucky Power Cooperative, Inc.
ELG	Effluent Limitations Guidelines and Standards
EPA	Environmental Protection Agency or the Agency
FGD	Flue gas desulfurization
FR	Federal Register
gpd	Gallons per day
gpm	Gallons per minute
GWMCA	Groundwater Monitoring and Corrective Action
IW	Investigatory well
KPDES	Kentucky Pollutant Discharge Elimination System
MCL	Maximum contaminant level
MW	Monitoring well
NEPA	National Environmental Policy Act
OLEM	EPA's Office of Land and Emergency Management
ORCR	EPA's Office of Resource Conservation and Recovery
P.E.	Professional Engineer
PJM	Pennsylvania-New Jersey-Maryland Interconnection LLC
POTW	Publicly owned treatment works
PSC	Kentucky Public Service Commission

PZ	Piezometer
RCRA	Resource Conservation and Recovery Act
RTO	Regional transmission organization
SSI	Statistically significant increase
TDS	Total dissolved solids
USWAG	Utility Solid Waste Activities Group
WMB	Water Mass Balance

I. General Information

A. What Decision Is EPA Proposing to Make?

The U.S. Environmental Protection Agency (EPA) is proposing to conditionally approve the extension request in the Demonstration submitted by East Kentucky Power Cooperative (EKPC) for the Spurlock Ash Pond at the Spurlock Power Station located near Maysville, Kentucky. EPA is proposing to determine that available alternative capacity does not exist for the specified coal combustion residuals (CCR) and non-CCR wastestreams, except for the two non-CCR wastestream outage flows—air preheater wash water and boiler non-chemical metal cleaning wastewater. For those two non-CCR wastestreams, EPA proposes to determine that available alternative capacity exists. EPA is also proposing to find that it was technically infeasible to complete the measures necessary to obtain alternative capacity on-site or off-site prior to April 11, 2021, and that the schedule for obtaining alternative capacity to the Spurlock Ash Pond is reasonable. However, EPA is also proposing to find that the Demonstration fails to show that EKPC is in compliance with the CCR regulations unless EKPC submits additional information and takes additional actions. Accordingly, EPA is proposing to condition approval on EKPC taking certain actions to bring the facility into compliance with all the requirements applicable to the facility under the 40 C.F.R. part 257, subpart D regulations. The required additional actions are specified in Section IV.A of this proposed decision. If finalized, EPA's conditional approval will allow EKPC to continue placing certain CCR and non-CCR wastestreams in the Spurlock Ash Pond through November 30, 2022, if the conditions are met. EPA is proposing that failure to meet any of the conditions subsequent to issuance of the final conditional approval will automatically convert the conditional approval into a denial. In such a case, the facility's deadline to cease placing any waste into the Spurlock Ash Pond would revert

to 135 days from the date of EPA's final decision, which is the deadline that would have been established had EPA denied the extension request. See Section IV.B of this document for further discussion of the basis for that deadline.

Additionally, EPA solicits comment on whether to deny the Demonstration on the grounds that it fails to meet the requirements of 40 C.F.R. § 257.103(f)(1)(iv) in case, after reviewing public comment, EPA determines a conditional approval to be inappropriate.

B. What Is the EPA's Authority for Proposing this Decision?

This proposal is being issued pursuant to the authority in 40 C.F.R. § 257.103(f).

C. What is EPA's Authority to Issue Conditional Approvals?

EPA is proposing to reinterpret the regulations at 40 C.F.R. § 257.103(f)(3) to allow the Agency to issue conditional approvals in certain limited circumstances. The regulation provides that EPA will issue "a decision" on the application, which by its terms does not limit EPA to either an approval or denial, leaving open the option that the Agency could make a different decision. The preamble also contemplates conditional approvals. 85 Federal Register (FR) 53516 at 53549 (August 28, 2020). Further, the regulations allow EPA to request information after an application is submitted, indicating that EPA is not limited to the information contained in the Demonstration submitted on November 30, 2020, and that aspects of a facility's compliance may be assessed and resolved at a later time. 40 C.F.R. § 257.103(f)(3)(ii).

EPA acknowledges, however, that one portion of the preamble reflected a broadly stated and thus potentially unclear different interpretation of these regulations, stating that the Agency would not grant a facility more time to operate an impoundment unless the facility was actually in compliance with all of the requirements of 40 C.F.R. part 257, subpart D "prior to" the time of approval. 80 FR 53543 (August 28, 2020). During its preliminary review of the demonstrations,

EPA identified potential types of noncompliance that share a number of key characteristics—i.e., noncompliance where the remedy is clearly defined and can be implemented quickly—that differ from the types of noncompliance EPA had anticipated when it originally interpreted the regulation in the preamble to the final rule. Accordingly, EPA is proposing to clarify and revise its original interpretation to account for this new information by allowing for conditional approvals in limited situations where the actions necessary to address the noncompliance are straightforward and the facility could take the actions well before the extended deadline it had requested.

For example, in a number of demonstrations, the only area of noncompliance EPA identified was that the facilities had failed to adequately support the claim that the detection of a statistically significant increase of an Appendix III to part 257 constituent was due to another source. The remedy for these facilities would be to initiate assessment monitoring in accordance with 40 C.F.R. § 257.95(a), which could be implemented within a few weeks of EPA's final decision (as much time as it takes to have the contractors sample the wells). While these facilities may disagree with EPA's conclusion that they had failed to adequately support their claims, there should be no disagreement about the remedy, because 40 C.F.R. § 257.95 unambiguously directs the facilities' subsequent actions. The situation is similar with respect to other potential violations of the groundwater monitoring regulations EPA identified in its review. For example, if the facility failed to locate downgradient wells at the waste boundary, the remedy would be to install new wells at the waste boundary. This remedy can also be implemented quickly; new wells can be installed within a few weeks of EPA's decision. There is also no dispute about remedy; the regulations unambiguously require installation of downgradient wells at the waste boundary and precisely define the location of the waste boundary.

One of the key characteristics of these types of noncompliance is that the remedies are straightforward and easily identifiable. As a consequence, EPA could readily develop conditions to bring the facilities into compliance and could determine whether those conditions had been met based on appropriate documentation. Further, in all of those cases, facilities could cure the noncompliance well before the deadline it requested. These types of noncompliance are different from the types of noncompliance EPA had anticipated when it expressed its prior interpretation. The statements in the preamble that EPA would not grant facilities more time to operate unless they were in compliance "prior to" the approval reflected EPA's concern that the Agency could not authorize a sustained period of continued operation of deficient CCR impoundments without some evidence that the risks were adequately mitigated. As EPA explained, documentation of compliance with the part 257, subpart D regulations provides critical support for any decision authorizing continued use of the impoundment while alternative capacity is created. EPA's concern is ameliorated where noncompliance is cured quickly and well before any approved extension ends. And, as a practical matter, EPA considers that this approach will lead to quicker compliance than could be achieved through a denial and enforcement process. As a result, EPA is proposing to allow conditional approvals for a subset of cases where the identified remedies for noncompliance with groundwater monitoring requirements may be easily and quickly remedied.

By contrast, EPA does not anticipate issuing a conditional approval in cases where the noncompliance involves more complicated technical issues where the specific actions necessary to come into compliance cannot be easily identified and/or cannot be remedied quickly. For example, where a facility has failed to adequately pursue corrective action, the measures needed to come back into compliance are likely to be more complicated and time-consuming to

implement. The same is true where a facility is out of compliance with many regulatory requirements (e.g., a facility has failed to comply with both the groundwater monitoring and closure requirements). Moreover, EPA continues to believe that the policy concerns underlying its statements in the preamble remain valid. In situations in which there is affirmative evidence of harm at the site, such as where a facility has delayed corrective action, EPA cannot grant additional time for the impoundment to operate without some evidence that these risks are mitigated. EPA will evaluate on a case-by-case basis whether a conditional approval is warranted taking into account the context of a particular facility's circumstances and extension application.

II. Background

A. Part A Final Rule.

In April 2015, EPA issued its first set of regulations establishing requirements for CCR surface impoundments and landfills (Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities, 80 FR 21301) (the "CCR Rule"). In 2020, EPA issued the CCR A Holistic Approach to Closure Part A: Deadline to Initiate Closure rule (85 FR 53516 (Aug. 28, 2020)) (the "Part A Rule"). The Part A Rule established April 11, 2021, as the date that electric utilities must cease placing waste into all unlined CCR surface impoundments. The Part A Rule also revised the alternative closure provisions of the CCR Rule (40 C.F.R. § 257.103) by allowing owners or operators to request an extension to continue to receive both CCR and non-CCR wastestreams in an unlined CCR surface impoundment after April 11, 2021, provided that certain criteria are met. EPA established two site-specific alternatives to initiate closure of CCR surface impoundments (40 C.F.R. § 257.103(f)), commonly known as extensions to the date to cease receipt of waste: 1) development of alternative capacity by the April 11, 2021, deadline is technically infeasible (40 C.F.R. §

257.103(f)(1)), and 2) permanent cessation of a coal-fired boiler(s) by a date certain (40 C.F.R. § 257.103(f)(2)).

The first site-specific alternative to initiate closure of CCR surface impoundments is *Development of Alternative Capacity is Technically Infeasible* (40 C.F.R. § 257.103(f)(1)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using its unlined surface impoundment for the specific amount of time needed to develop alternative disposal capacity for its CCR and non-CCR wastestreams. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(1). To have an alternative deadline approved, the regulation requires the facility to demonstrate that: 1) no alternative disposal capacity is currently available on- or off-site of the facility; 2) the CCR and/or non-CCR wastestream must continue to be managed in that CCR surface impoundment because it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity either on-site or off-site at the facility by April 11, 2021; and 3) the facility is in compliance with all requirements of 40 C.F.R. part 257, subpart D. 40 C.F.R. § 257.103(f)(1)(i) through (iii). To support the requested alternative deadline, the facility must submit detailed information demonstrating that the amount of time requested is the fastest technically feasible time to complete development of alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A).

The second site-specific alternative to initiate closure of CCR surface impoundments is for the owner or operator to demonstrate that it will permanently cease operation of coal-fired boilers at the facility. *Permanent Cessation of Coal-Fired Boiler(s) by a Date Certain*, (40 C.F.R. § 257.103(f)(2)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using an unlined CCR surface impoundment in the interim period prior to permanently stopping operation of coal-fired boiler(s) at the facility.

The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(2). The owner or operator must show that 1) the facility will cease operation of coal-fired boiler(s) and complete closure of the CCR surface impoundment(s) by the specified deadlines (no later than October 17, 2023, for impoundments 40 acres or smaller, and no later than October 17, 2028, for impoundments larger than 40 acres); and 2) in the interim period prior to the closure of the coal-fired boiler, the facility must continue to use the CCR surface impoundment due to the absence of alternative disposal capacity both on-site or off-site. *Id*. Unlike the requirements for the first alternative, the owner or operator does not need to develop alternative disposal capacity. The regulations require a demonstration that: 1) no alternative disposal capacity is available on-site or off-site of the facility; 2) the risks from continued use of the impoundment have been adequately mitigated; 3) the facility is in compliance with all other requirements of 40 C.F.R. part 257, subpart D; and 4) closure of both the impoundment and the coal-fired boiler(s) will be completed in the allowed time. 40 C.F.R. § 257.103(f)(2)(i) through (iv).

B. H.L. Spurlock Power Station.

On November 30, 2020, the East Kentucky Power Cooperative, Inc. submitted a Demonstration pursuant to 40 C.F.R. § 257.103(f)(1) requesting additional time to develop alternative capacity to manage CCR and non-CCR wastestreams at the Spurlock Power Station in Maysville, Kentucky. EKPC is the owner and operator of the Spurlock Power Station. EKPC is seeking EPA's approval of an alternative site-specific deadline to initiate closure of its Spurlock Ash Pond. Specifically, EKPC is requesting an alternative deadline of November 30, 2022, by which date EKPC will cease routing all CCR and non-CCR wastestreams to the Spurlock Ash Pond and take additional actions to initiate closure of the impoundment.

As described in the Demonstration, EKPC is in the process of obtaining alternative capacity to the Spurlock Ash Pond by implementing three main efforts: 1) converting wet handling systems to dry handling systems for certain bottom ash and fly ash wastestreams; 2) constructing a new treatment system and thermal evaporation system for flue gas desulfurization blowdown; and 3) constructing a new non-CCR wastewater basin for non-CCR flows.

The November 30, 2020, Spurlock Demonstration included several figures in the appendices that were marked “Privileged and Confidential.” On May 26, 2021, EPA contacted EKPC and requested that these markings be removed. EKPC agreed to EPA’s request, and, on June 3, 2021, EKPC submitted a revised Demonstration without these markings. Though EKPC made no other changes to the November 30, 2020 version of the Demonstration, EPA included the June 3, 2021 version of the Demonstration in the docket as support for this proposed decision.

EPA is providing additional details on the Spurlock facility below, including information on the generation capacity of the Spurlock Power Station, information on its CCR surface impoundments and landfills, and information on other non-CCR impoundments. This summary is based on information provided in the Demonstration.

1. Coal-fired boilers and generation capacity.

The Demonstration states that Spurlock operates four coal-fired generating units: Unit 1, Unit 2, Unit 3, and Unit 4. The total net generation capacity of the four generating units is 1,346 megawatts with the units having net generation capacities of 300, 510, 268, and 268 megawatts, respectively.

2. CCR units and CCR wastestreams.

EKPC operates two CCR units at Spurlock that are currently receiving CCR and are subject to the federal CCR regulations. One unit is a surface impoundment named the Spurlock Ash Pond (and also referred to as the "Surface Impoundment" in the Demonstration) and is the CCR unit for which an extension is sought. The Demonstration states that the approximate surface area of the Spurlock Ash Pond is 67 acres. The other unit receiving CCR is a landfill named the Spurlock Station Landfill, which is located approximately 1.5 miles southwest of the Spurlock Ash Pond (straight line distance between the two CCR units). EKPC is also constructing a new CCR landfill named Peg's Hill Landfill; however, the Demonstration explains that this landfill has yet to receive any CCR.

Relevant to EKPC's request, the Spurlock Ash Pond is an unlined CCR surface impoundment and subject to closure pursuant to 40 C.F.R. § 257.101(a)(1). This provision provides that EKPC must cease placing CCR and non-CCR wastestreams into the unit and initiate either the retrofit or closure of the unit as soon as technically feasible, but not later than April 11, 2021. EKPC states that the Spurlock Ash Pond is in compliance with all location restrictions specified in 40 C.F.R. §§ 257.60 through 257.64.

The Demonstration explains that the installation of several new systems during the outage of boiler Unit 2 started on September 26, 2020, will result in the elimination of continuous flows of bottom ash transport water and flue gas desulfurization (FGD) wastestreams, as well as potential episodic flows of fly ash to the Spurlock Ash Pond by a backup wet handling system should the primary pneumatic conveying system for fly ash fail. According to the visual timeline included in Appendix B of the Demonstration, installation of the new systems was scheduled to be completed by March 1, 2021. While installation of the new systems will end the *continuous* flows of all CCR wastestreams to the Spurlock Ash Pond from all four boiler units prior to April

11, 2021, EKPC states that Spurlock Ash Pond could potentially receive *intermittent* FGD flows from boiler Units 1 and 2 through the end of 2021. The Demonstration explains that a tuning period is planned following construction of the new FGD wastewater treatment system, and that there may be system upsets during seasonal load changes; consequently, the facility may need to use the Spurlock Ash Pond for FGD wastestreams during these events through the end of 2021.

At the time the Demonstration was submitted, all CCR wastestreams from boiler Unit 1 (except potentially intermittent FGD flows) and all CCR wastestreams from boiler Units 3 and 4 were already managed dry. EKPC also explains that due to earlier efforts to convert wet handling systems to dry handling, such as the dry bottom ash handling conversion for boiler Unit 1 completed in May 2020, CCR generated by boiler Units 1, 3, and 4 are either disposed in the Spurlock Station Landfill or sent off-site for beneficial use. See Section 2.1.1 of the Demonstration.

3. Non-CCR impoundments and non-CCR wastestreams.

As of the date EKPC submitted the Demonstration to EPA, the Spurlock Ash Pond also was receiving several non-CCR wastestreams. Some of these wastestreams are generated on a continuous basis, some on an intermittent basis (e.g., following precipitation), and others are generated infrequently during a scheduled outage of a boiler. Non-CCR wastestreams that are managed in the Spurlock Ash Pond are shown in Table 2-2 in Section 2.1.2 of the Demonstration and include[2]:

- Clarifier sludge from raw water clarifiers used to treat cooling water makeup;
- Activated carbon filter backwash from the boiler water pretreatment system;
- Demineralization regeneration flows from a neutralization tank;

[2] Non-CCR wastestreams that are not managed in or will no longer be directed to the Spurlock Ash Pond prior to April 11, 2021 are not discussed in this section of the document.

- Coal pile runoff and site stormwater runoff;
- Wash waters generated from the cleaning of the air preheater during boiler outage events; and
- Non-chemical metal cleaning wastewaters generated from the cleaning of the boiler during boiler outage events.

The Demonstration identifies six non-CCR impoundments at Spurlock, which include a coal pile runoff pond, a primary lagoon, two secondary lagoons, and two landfill runoff and leachate ponds. Four of these non-CCR impoundments—the coal pile runoff pond, primary lagoon, and two secondary lagoons—are located near each other and are used as part of the management of process waters at Spurlock (e.g., sharing and reusing of the water). The two landfill runoff and leachate ponds are not connected to the Spurlock Ash Pond in this manner and have their own outfalls that discharge to Lawrence Creek. The landfill runoff and leachate ponds are located approximately 1.5 miles southwest of the Spurlock Ash Pond and the other non-CCR impoundments. See overall site plan figure in Appendix A of the Demonstration for a depiction of impoundment locations.

Three of the above-mentioned non-CCR wastestreams are collected in sumps and pumped to the Spurlock Ash Pond: the clarifier sludge, the activated carbon filter backwash, and the demineralization regeneration flows. Coal pile runoff and site stormwater runoff flows are first collected in the coal pile runoff pond prior to being pumped to the Spurlock Ash Pond. The final two non-CCR wastestreams—air preheater wash water and boiler non-chemical metal cleaning wastewaters—are only generated during scheduled boiler outages. These non-CCR wastestream flows are collected in the coal pile runoff pond prior to being pumped to the Spurlock Ash Pond. EKPC states that the non-CCR impoundments at Spurlock do not have

sufficient storage and treatment capacity to manage the aggregate volume of the non-CCR wastestreams without using the Spurlock Ash Pond. See Section 2.1.2 and Appendix A of the Demonstration for information on and flow rates of the non-CCR wastestreams.

III. EPA Analysis of the Spurlock Demonstration

An owner or operator seeking a site-specific alternative deadline to initiate closure of an unlined CCR surface impoundment under 40 C.F.R. § 257.103(f)(1) is required to show that the wastestream(s) must continue to be managed in the CCR surface impoundment in question because it was technically infeasible to cease placement of waste prior to April 11, 2021. To demonstrate this, the owner or operator needs to show that 1) no alternative disposal capacity is available on-site or off-site, 2) that it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity on-site or off-site prior to April 11, 2021, and 3) that the entire facility is in compliance with the CCR rule.

EPA determined that the Demonstration submitted by EKPC pursuant to 40 C.F.R. § 257.103(f)(1) was complete. EPA evaluated the Spurlock Demonstration and is proposing to conditionally grant the extension request for an alternative deadline of November 30, 2022, provided EKPC meets the conditions specified in Section IV below.

The CCR regulations in 40 C.F.R. § 257.103(f)(1)(vi) establish the latest deadlines that facilities can request to cease receiving waste under this alternative closure provision. Except for one category of surface impoundments defined in the regulations not relevant here, the latest permissible deadline to cease receiving waste is October 15, 2023. EKPC is requesting an alternative deadline of November 30, 2022 for the Spurlock Ash Pond, which is earlier than the latest deadline permissible under the regulations.

CCR surface impoundments that demonstrate compliance with the location restrictions under 40 C.F.R. §§ 257.61 through 257.64 (i.e., wetlands, fault areas, seismic impact zones, and unstable areas, respectively) are eligible to request an extension to receive non-CCR wastestreams after April 11, 2021. See 40 C.F.R. § 257.103(f)(1)(ii)(B). The Demonstration states that Spurlock Ash Pond has demonstrated compliance with all location restrictions, including the standards under 40 C.F.R. §§ 257.61 through 257.64. EPA reviewed the documentation posted by EKPC on its CCR website and believes that the posted report demonstrates compliance with the required location standards.[3] Therefore, EPA is proposing to determine that the Spurlock Ash Pond is eligible to receive both CCR and non-CCR wastestreams after April 11, 2021, should EPA grant EKPC's request.

A. Analysis of Whether Alternative Capacity Currently Exists.

For the reasons below, EPA is proposing to determine that available alternative capacity does not exist for the specified CCR and non-CCR wastestreams, except for the two non-CCR wastestream outage flows—air preheater wash water and boiler non-chemical metal cleaning wastewater. For those two non-CCR wastestreams, EPA proposes to determine that available alternative capacity exists and must be utilized no later than five days after the date of EPA's final decision.

1. CCR wastestreams.

According to the Demonstration (and as presented in Section II.B.2 of this document), actions taken by EKPC during the outage in the fall of 2020 should have resulted in the elimination of all *continuous* flows of CCR to the Spurlock Ash Pond prior to April 11, 2021. The Demonstration states, however, that the Spurlock Ash Pond could potentially receive

[3] Location Restrictions Compliance Demonstrations, Spurlock Ash Pond, EPA Final Coal Combustion Residuals (CCR) Rule, East Kentucky Power Cooperative H.L. Spurlock Station, Maysville, Kentucky. October 10, 2018.

intermittent FGD flows from boiler Units 1 and 2 through the end of 2021. The Demonstration explains that a tuning period following construction of the new FGD wastewater treatment system is needed between March 1 and December 31, 2021. Any treatment system upsets that occur during this period, especially due to seasonal load changes, may require intermittent FGD flows to be directed to the Spurlock Ash Pond. If generated, EKPC estimates that the intermittent FGD flows would be 223 gallons per minute (or 321,120 gallons per day).[4] Spurlock employs equalization tanks that have the capacity to hold approximately 24 hours of the maximum flow, but flows generated during upset conditions that exceed this tank storage capacity need to be directed elsewhere. The daily volume of 321,120 gallons is approximately equivalent to fifteen 21,000-gallon tanks or forty-five 7,000-gallon trucks.

Rerouting FGD upset flows to another CCR surface impoundment. EKPC explains that redirecting potential intermittent FGD upset flows to a different CCR surface impoundment would not be a viable approach because the Spurlock Ash Pond is the only CCR surface impoundment on-site and there are no other impoundments on-site that are designed to meet the requirements of federal CCR regulations. While EKPC also operates a CCR landfill (Spurlock Station Landfill), the Demonstration explains that this landfill is limited to dry CCR and cannot receive the FGD wastestreams.

EPA agrees that there are no other on-site CCR-compliant units at Spurlock that could currently receive wet-sluiced FGD flows. Therefore, EPA is proposing to determine that directing the FGD wastestream to another on-site CCR unit is not a technically feasible option.

2. Non-CCR wastestreams.

---

[4] See Table 2-1 in Section 2.1.1 of the Demonstration. The Demonstration does not estimate the potential frequency and duration of potential upset conditions.

The Demonstration identifies six different non-CCR wastestreams that will not be eliminated or redirected from the Spurlock Ash Pond by April 11, 2021:

- Clarifier sludge from raw water clarifiers used to treat cooling water makeup. The average flow for this wastestream is 90 gallons per minute (gpm) (or 129,600 gallons per day (gpd)).
- Activated carbon filter backwash from the boiler water pretreatment system. The average flow is 26 gpm (or 37,440 gpd).
- Demineralization regeneration flows from a neutralization tank. The average flow is 5 gpm (or 7,200 gpd).
- Coal pile runoff and site stormwater runoff. The maximum flow rate for this intermittent wastestream is estimated to be 6,900 gpm (or 9.9 million gpd).
- Wash waters generated from the cleaning of the air preheater during boiler outage events. Each outage event generates 1–2 million gallons of wastewater.
- Non-chemical metal cleaning wastewaters generated from the cleaning of the boiler during boiler outage events. Each outage event generates 1–2 million gallons of wastewater.

<u>Rerouting the coal pile runoff and site stormwater runoff wastestreams to another on-site impoundment</u>. EKPC states that the coal pile runoff and site stormwater flows are currently collected in the coal pile runoff pond prior to being pumped to the Spurlock Ash Pond for retention and treatment. The wastestreams are then pumped to the secondary lagoon pond and discharged to the Ohio River. The Demonstration explains that managing the runoff wastestreams in the coal pile runoff pond alone (without pumping the flows to the Spurlock Ash Pond) is not a viable approach because the coal pile runoff pond is undersized relative to the

runoff volume generated during the design storm event. That is, the coal pile runoff pond alone is not sized to provide the needed retention and treatment to meet the limits required by its discharge permit. The Demonstration explains that 19.5 acre-feet of runoff would be generated during the design storm event and that the capacity of the coal pile runoff pond is only 10.8 acre-feet.[5]

EPA is proposing to agree with EKPC that the coal pile runoff pond alone does not provide sufficient capacity to manage coal pile runoff and site stormwater flows because the pond alone is undersized to provide the needed residence time for solids to settle out. Therefore, managing the coal pile runoff and site stormwater flows in the coal pile runoff pond alone is not a technically feasible alternative to treat these flow volumes prior to discharge.

EPA also confirmed that the aggregate storage capacity of the Spurlock non-CCR wastestream impoundments located proximate to the coal pile runoff pond are insufficient to handle the runoff generated during the design storm event. The primary lagoon is estimated to be approximately 0.3 acres with a storage capacity of 1.5 acre-feet. The two secondary lagoons appear similar in size with the area of each being approximately 0.4 acres with a capacity of 3 acre-feet. Based on these estimates, the total storage capacity of the coal pile runoff pond, primary lagoon, and both secondary lagoons is approximately 18.3 acre-feet (10.8 + 1.5 + 3 + 3 = 18.3 acre-feet), which is still less than the 19.5 acre-feet of runoff that is generated during a design storm event. Thus, the aggregate storage capacity of these four non-CCR wastestream impoundments would be insufficient to handle the flows generated by the design storm event.

While Spurlock also operates two landfill runoff and leachate ponds with a combined capacity of approximately 7 acre-feet (based on no emergency spillway discharge), EPA does not

---

[5] One acre-foot is equivalent to approximately 325,851 gallons.

consider the landfill runoff and leachate ponds as possible alternative capacity for the coal pile runoff and site stormwater flows. This is because runoff from the landfill surface area during the same storm event would significantly reduce available storage capacity of the two landfill runoff and leachate ponds, thus diminishing the ability of the landfill runoff and leachate ponds to accommodate the coal pile runoff and site stormwater flows. The engineering calculations contained in the run-on and run-off control system plan for the Spurlock Station Landfill support this assertion.[6] The surface water control calculations documented in this plan show that the design storm event at peak stage consumes nearly 6.8 acre-feet of storage capacity of the landfill leachate ponds, which is over 90% of the available capacity when assuming no emergency spillway discharge. Thus, the landfill runoff and leachate ponds would have limited available excess storage capacity for wastestreams generated elsewhere at Spurlock. Furthermore, using the two landfill runoff and leachate ponds would likely involve additional design, installation of equipment, and potentially permitting to reroute the coal pile runoff and site stormwater flows because these ponds are located approximately 1.5 miles southwest of the coal pile runoff pond (straight line distance). Therefore, EPA is proposing to determine that managing the remaining coal pile runoff and site stormwater runoff flows in the lagoon system and/or landfill runoff and leachate ponds was not a technically feasible option.

Rerouting the clarifier sludge wastestream to another on-site impoundment. The Demonstration states the clarifier sludge wastestream is currently collected in sumps and pumped to the Spurlock Ash Pond. After retention and treatment in the Spurlock Ash Pond, these and other wastestreams are sent to the secondary lagoon pond and discharged to the Ohio River. EKPC explains that the clarifier sludge wastestream consists of 5% solids and cannot be

[6] Spurlock Station Landfill Run-On and Run-Off Control System Plan. October 13, 2016.

sufficiently treated in the primary and secondary lagoon system without violating the total suspended solids discharge limits due to insufficient retention time.

EPA agrees that the solids content of the clarifier sludge wastestream prevents this wastestream from being redirected to the lagoon system for treatment prior to discharge. Treatment of the clarifier sludge wastestream in the lagoon system would rely on gravity to remove solid particles (i.e., suspended solids) from the wastestream. However, because the larger flows of coal pile runoff and site stormwater runoff wastestreams would be comingled with the clarifier sludge wastestream in the lagoon system, thus effectively reducing the residence time of the system, the required removal of suspended solids would not likely be achieved. Therefore, EPA is proposing to determine that managing the clarifier sludge flows in lagoon system alone was not a technically feasible option.

Rerouting the activated carbon filter backwash and demineralizer regeneration wastestreams to another on-site impoundment. The Demonstration provides the same rationale for these two non-CCR wastestreams, so they are being addressed together in this document for consideration of whether these wastestreams can be rerouted. EKPC states the activated carbon filter backwash wastestream is currently collected in sumps and pumped to the Spurlock Ash Pond with the clarifier sludge wastestream. The demineralizer regeneration wastestreams are currently collected and mixed in a neutralization tank prior to being routed to the Spurlock Ash Pond. After retention and treatment in the Spurlock Ash Pond, these wastestreams are sent to the secondary lagoon pond and discharged to the Ohio River. EKPC explains that rerouting these wastestreams to the primary and secondary lagoon system would require wastewater sampling and characterization, potential permit modifications, and the installation of sumps, pumps and

piping. Further, it is not known whether the existing lagoon system would provide the necessary retention time to remove total suspended solids prior to discharge.

As discussed earlier with the clarifier sludge wastestream, it does not appear that the lagoon system alone would provide adequate retention for suspended solids treatment if these wastestream were redirected to the lagoon system prior to discharge. Therefore, EPA is proposing to determine that managing the activated carbon filter backwash and demineralizer regeneration wastestreams in the lagoon system alone was not a technically feasible option by April 11, 2021.

Rerouting outage flows to another on-site impoundment. EKPC explains that the two non-CCR wastestream outage flows—air preheater wash water and boiler non-chemical metal cleaning wastewaters—are only generated during scheduled boiler outages. These non-CCR wastestream flows are currently collected in the coal pile runoff pond prior to being pumped to the Spurlock Ash Pond for retention and treatment. These flows are then sent from the Spurlock Ash Pond to the secondary lagoon pond and discharged to the Ohio River. The Demonstration states that these outage flows could be managed by performing wash events outside of periods of rain and EKPC does not explain why it would be technically infeasible to do so. Given the apparent technical feasibility of managing the outage flows elsewhere (i.e., not in the Spurlock Ash Pond), EPA is proposing to determine that EKPC's Demonstration failed to demonstrate that there is not available alternative capacity for these two non-CCR wastestreams. Because alternative capacity for these non-CCR wastestreams apparently exists, 40 C.F.R. § 257.103(f)(1)(v) specifies that Spurlock must manage these wastestreams generated during future scheduled outages elsewhere. While the Demonstration discusses the scheduled outages in

the spring and fall of 2020, it does not provide details on future outages scheduled in 2021 and 2022.

B. Analysis of Whether It Was Technically Feasible to Provide Alternative Capacity.

For the reasons given below, EPA is proposing to determine that it was not technically feasible to develop alternative capacity for CCR and non-CCR wastestreams by April 11, 2021, except for the three actions EKPC said it was undertaking (i.e., converting to dry handling of bottom ash, converting to dry handling for fly ash, and installing a new FGD wastewater treatment system).

1. CCR wastestreams.

<u>Converting to dry handing of bottom ash</u>. The Demonstration states that Spurlock is installing new dry ash handling systems and was scheduled to cease wet sluicing of bottom ash to the Spurlock Ash Pond prior to April 11, 2021. The necessary actions to convert boiler Units 1 and 2 to dry ash handling were completed as part of the scheduled spring 2020 and fall 2020 outages. Thus, developing alternative capacity for bottom ash wastestreams prior to April 11, 2021, was technically feasible and was scheduled to be completed at Spurlock by this date.

<u>Converting to dry handling of fly ash</u>. EKPC explains that Spurlock is installing new equipment to replace the fly ash wet sluicing backup system that will eliminate the potential use of Spurlock Ash Pond for fly ash wastestreams. The necessary actions to convert boiler Units 1 and 2 to dry ash handling were completed as part of the scheduled spring 2020 and fall 2020 outages and were scheduled to be finished before April 11, 2021. Thus, developing alternative capacity for fly ash wastestreams prior to April 11, 2021was technically feasible and was scheduled to be completed at Spurlock by this date.

Installing a new FGD wastewater treatment system. The Demonstration states that EKPC is in the process of installing a new FGD physical and chemical wastewater treatment system beginning with the fall 2020 outage. The new FGD wastewater treatment system was on schedule to be completed and operational prior to April 11, 2021, and would result in the elimination of all *continuous* FGD flows to the Spurlock Ash Pond. Thus, developing alternative capacity for continuous FGD wastestreams prior to April 11, 2021, was technically feasible and was scheduled to be completed at Spurlock by this date.

The Demonstration states, however, that the Spurlock Ash Pond may need to receive *intermittent* FGD flows through the end of 2021. The Demonstration explains that a tuning period of the new FGD wastewater treatment system will take place between March 1 and December 31, 2021, and system upsets that exceed the storage capacity of the equalization tanks may occur during seasonal load changes before that time. Such upset events may require intermittent FGD flows to be directed to the Spurlock Ash Pond. EPA addresses whether it is technically feasible to develop alternative capacity for the intermittent FGD flows elsewhere in this section of the document.

Sending FGD upset flows to a POTW. EKPC discussed sending the FGD wastestream off-site to a publicly owned treatment works (POTW) but concluded that this would not be a technically feasible option. EKPC explains that existing Clean Water Act regulations require the FGD wastestream to meet applicable pretreatment standards specified in 40 C.F.R. § 423.16(e)(1) prior to it being sent to a POTW.[7] The necessary supporting pretreatment systems do not exist currently at Spurlock and the time to develop and permit such systems would go

[7] The Clean Water Act regulations under 40 C.F.R. part 423 apply to the Steam Electric Power Generating Point Source Category.

beyond April 11, 2021. In addition to the pretreatment issue, EKPC was unable to identify an off-site POTW that could reliably receive the FGD wastestream.

EPA is proposing to determine that off-site alternatives requiring pretreatment of FGD upset flows was not a technically feasible alternative to implement prior to April 11, 2021, because Spurlock lacks the necessary supporting pretreatment systems. Without permitted pretreatment systems available, EPA agrees that Spurlock would be unable to achieve the applicable pollutant discharge limits required for the FGD wastestream by current Clean Water Act requirements.

Constructing a new on-site CCR surface impoundment. EKPC states that constructing a new CCR impoundment for CCR or for potential intermittent FGD flows could not be implemented prior to April 11, 2021.[8] The Demonstration identifies two issues with this alternative. One is that construction of a new CCR surface impoundment would not provide compliance with Spurlock's Kentucky Pollutant Discharge Elimination System (KPDES) permit issued in October 2018, which requires Spurlock to cease bottom ash flows and install an FGD treatment system by December 2023. Another issue is that permitting a new CCR surface impoundment for CCR would trigger permitting and lengthy reviews, including those under the National Environmental Policy Act (NEPA) and by the Kentucky Public Service Commission (PSC). EKPC explains that the NEPA reviews would take over two years to complete and making modifications to the currently approved project would take 6 to 12 months to receive approval from the Kentucky PSC. As a result, the Demonstration explains that completing these

[8] As discussed in Section II.B.2 of this document, all *continuous* flows of CCR at Spurlock will have ceased prior to April 11, 2021. *Intermittent* FGD flows may need to be sent to the Spurlock Ash Pond during the tuning period of newly installed FGD treatment systems.

reviews, obtaining the necessary approvals, and constructing the new impoundment could not have been completed by April 11, 2021.

EPA is proposing to determine that it was not technically feasible for EKPC to develop alternative capacity for CCR by constructing a new CCR surface impoundment by April 11, 2021. As explained in the Demonstration, EKPC would need to seek approval from Kentucky PSC to modify the current project scope to add the new impoundment, modify the KPDES discharge permit for Spurlock, and construct the new impoundment. Such a project would require the facility to go through all the project phases, including engineering and design, contractor selection, procurement of materials, construction, and impoundment start up. EKPC estimates that this process would take over 2.5 years to complete. EPA believes this estimate is reasonable and consistent with analyses in the CCR Part A final rulemaking that established the deadline of April 11, 2021, under 40 C.F.R. § 257.101(a)(1) and (b)(1)(i). See 85 FR 53516 (August 28, 2020). In this final rule, EPA analyzed the steps that facilities need to take from start to completion to obtain alternative capacity for a variety of technology approaches. EPA determined that the average time frame to develop capacity by constructing a new CCR surface impoundment was 31 months, which is generally consistent with the information in the Demonstration indicating that implementing this approach by April 11, 2021 was not technically feasible. 85 FR at 53534.

Retrofitting the Spurlock Ash Pond. EKPC states that retrofitting a new CCR impoundment could not be implemented prior to April 11, 2021. Similar to the discussion above for constructing a new CCR surface impoundment, retrofitting the Spurlock Ash Pond would not provide compliance with Spurlock's KPDES permit, which requires Spurlock to cease bottom ash flows and install an FGD treatment system. Furthermore, EKPC explains that the retrofit of

the Spurlock Ash Pond would involve many of the same steps and tasks involved with constructing a new non-CCR wastewater basin within the footprint of the Spurlock Ash Pond, and the schedule shows that the new non-CCR wastewater basin could not have been completed by April 11, 2021.

EPA is proposing to determine that it was not technically feasible for EKPC to develop alternative CCR capacity by retrofitting the Spurlock Ash Pond by April 11, 2021. Similar to the discussion above for the time needed to construct a new CCR surface impoundment, EPA determined in the CCR Part A final rulemaking that the average time frame to develop capacity by retrofitting a CCR surface impoundment was approximately 30 months. See 85 FR at 53534 (August 28, 2020). This time frame is consistent with the information in the Demonstration indicating that retrofitting the impoundment by April 11, 2021, was not technically feasible.

Providing additional treatment capacity for FGD upset flows. As discussed in Section II.B.2 above, Spurlock uses equalization tanks with the capacity to hold approximately 24 hours of the maximum flow of FGD upset flows. However, EKPC explains that upset flows that exceed this tank storage capacity need to be directed elsewhere, such as the Spurlock Ash Pond. EKPC evaluated whether additional temporary treatment systems could be used to treat wastestreams generated after April 11, 2021. The Demonstration explains that Spurlock had already obtained approval to construct its environmental compliance projects (e.g., the new systems for bottom ash, fly ash, FGD blowdown, and non-CCR wastestreams) from the Kentucky PSC in May 2018. Moreover, detailed design work had already been completed, as well as the awarding of construction contracts. EKPC explains that revising its compliance projects (e.g., adding new treatment systems) would require Spurlock to redo steps already completed, such as completing design work, securing regulatory approvals, and placing

equipment orders. EKPC further explains that adding additional treatment capacity would have taken over 2.5 years to complete and could not have been completed prior to April 11, 2021.

EPA is proposing to determine that it was not technically feasible for EKPC to develop alternative CCR capacity by providing additional treatment capacity by April 11, 2021. EKPC completed design work, secured regulatory approvals, and placed equipment orders prior to the 2018 *USWAG* decision, which was the event that triggered the Spurlock Ash Pond to close. Thus, EPA believes it was reasonable for EKPC to believe it could rely on the Spurlock Ash Pond for any FGD upset flows when it was considering regulatory options and seeking regulatory approvals prior to the 2018 *USWAG* decision.[9] Adding a new treatment system would require Spurlock to reinitiate steps already completed, such as completing design work, securing regulatory approvals, and placing equipment orders, which EKPC estimates would take over 2.5 years to complete. Similar to the discussion above for the time needed to construct a new CCR surface impoundment, EPA determined in the CCR Part A final rulemaking that the average time frame to construct a wastewater treatment facility was slightly less than two years. See 85 FR at 53534 (August 20, 2020). This time frame is generally consistent with the information in the Demonstration indicating that developing new treatment capacity by April 11, 2021, was not technically feasible.

2. Non-CCR wastestreams

<u>Constructing a new non-CCR wastestream basin</u>. EKPC states that constructing a new basin for Spurlock's non-CCR wastestreams is a technically feasible alternative to provide capacity. As explained in the Demonstration, EKPC is currently constructing a new 12-acre non-CCR wastewater basin called the "Water Mass Balance Pond" or WMB Pond. This pond will

[9] The D.C. Circuit issued the decision on August 21, 2018, and the Court issued the mandate for this decision on October 15, 2018.

consist of a primary 3-acre basin and a secondary 9-acre basin with a total storage capacity of 76.2 million gallons (234 acre-feet). The Demonstration indicates that the new WMB Pond will be completed by November 30, 2022. EPA evaluates EKPC's justification for the selected option in Section III.E of this document.

Sending the coal pile runoff and site stormwater runoff wastestreams to a POTW. The Demonstration discusses sending these runoff wastestreams (6.4 million gallons or 19.5 acre-feet for the design storm) off-site to a POTW but concluded that this approach is not a technically feasible option. EKPC explains that a system of temporary tanks would be needed to store the runoff excess flows generated by the rain event prior to trucking the wastestreams to a POTW. This system would need to be designed to handle the excess flows generated during a design storm event (i.e., 10-year, 24-hour storm). The excess flows would be the volume that exceeds the capacity of the coal pile runoff pond (i.e., 8.7 acre-feet for the design storm event). EKPC estimates that a minimum of 135 tanks, each with a capacity of 21,000 gallons would be needed to store the excess flows and this total does not consider the additional tanks that would be needed to make up for capacity losses due to solids deposition in the tanks. Approximately 850 tanker trucks for each storm event would be required to transport the wastestreams stored in 135 tanks (the excess flows) plus the volume stored in the coal pile runoff pond, which would have to be removed so as to restore the full capacity of the pond prior to the next rain event. Furthermore, EKPC explains that implementing a storage system of a minimum of 135 tanks would require design, reconfiguration, installation, and environmental permitting that would extend the overall schedule. In addition, similar to the FGD wastestreams discussed earlier, EKPC was unable to identify an off-site POTW that could reliably receive the runoff wastestreams. EKPC explains that it contacted the nearby wastewater treatment plant in

Maysville and determined that the facility could not handle this flow volume. The Maysville facility is designed to receive 5.5 million gallons of wastewater per day (or 16.9 acre-feet per day), which is already commonly exceeded at the POTW following periods of heavy rain according to the Demonstration.

EPA is proposing to determine that sending the coal pile runoff and site stormwater runoff wastestreams to an off-site POTW was not a technically feasible option to implement prior to April 11, 2021. First, consistent with EKPC's statements in the Demonstration, EPA has been unable to identify a POTW within 50 miles of Spurlock with sufficient available capacity to accept these wastestreams. EPA believes that the location of Spurlock is a contributing factor in being unable to locate available capacity within a reasonable distance to the plant. Spurlock is located in rural northern Kentucky along the Ohio River and is approximately 65 miles northeast of Lexington and over 60 miles southeast of Cincinnati. Second, even if an off-site treatment facility was located, EPA believes that the number of tanks needed for temporary storage and trucks to transport the wastestreams is unreasonable to implement.

Sending the water treatment wastestreams to a POTW. The Demonstration aggregates several non-CCR wastestreams that are collected in sumps and currently pumped to the Spurlock Ash Pond as water treatment wastes. These wastestreams include the clarifier sludge, activated carbon backwash, and demineralizer regeneration flows (174,000 gallons per day). EKPC discusses sending these water treatment wastestreams off-site to a POTW but concluded that this approach is not a technically feasible option. EKPC explains that a system of temporary tanks would be needed to store the water treatment wastestreams prior to trucking the wastestreams to a POTW. EKPC estimates that a minimum of eight tanks (each with a capacity of 21,000 gallons) would be needed to temporarily store the volume of the wastestreams prior to sending it

off-site. However, given that the wastestreams would consist of approximately 5% solids, the Demonstration states that this approach would require frequent replacement of the tanks due to solids deposition in the tanks. Approximately 23 tanker trucks per day would be required to transport the wastestreams to the POTW. In addition, similar to the FGD wastestreams discussed earlier, EKPC was unable to identify an off-site POTW that could reliably receive the runoff wastestreams.

EPA is proposing to determine that sending the water treatment wastestreams to an off-site POTW was not a technically feasible option to implement prior to April 11, 2021. Consistent with EKPC's statements in the Demonstration, EPA has been unable to identify a POTW within 50 miles of Spurlock with sufficient available capacity to accept these wastestreams. As discussed above for the runoff wastestreams, EPA believes that Spurlock's remote location is a contributing factor in being unable to locate available capacity within a reasonable distance to the plant. Consequently, even if the number of tanks for temporary storage and trucks to transport the wastestreams could reasonably be implemented, there appears to be no POTW that could accept the wastestreams.

<u>Sending the outage wastewaters to a POTW</u>. EKPC discusses sending the outage wastestreams off-site to a POTW but concluded that this approach is not technically feasible. EKPC explains that a system of temporary tanks would be needed to store the outage flows prior to trucking the wastestreams off-site (1–2 million gallons of wastewater per outage event). EKPC estimates that approximately 95 tanks each with a capacity of 21,000 gallons would be needed to store the volume of the wastewaters generated per outage event. Approximately 265 tanker trucks per event would be required to transport the wastewaters to the POTW. In addition,

similar to the FGD wastestreams discussed earlier, EKPC was unable to identify an off-site POTW that could reliably receive the outage wastestreams.

EPA is proposing to determine that sending the outage flows to an off-site POTW off-site was not a technically feasible option to implement prior to April 11, 2021, for similar reasons as discussed above for other non-CCR wastestreams. First, consistent with EKPC's statements in the Demonstration, EPA has been unable to identify a POTW within 50 miles of Spurlock with sufficient available capacity to accept these wastestreams. As discussed above for the runoff wastestreams, EPA believes that Spurlock's remote location is a contributing factor in being unable to locate available capacity within a reasonable distance to the plant. Second, even if an off-site treatment facility was located, EPA believes that the number of tanks for temporary storage and trucks to transport the wastestreams is unreasonable to implement.

<u>Sending non-CCR wastestreams to the temporary pond dewatering treatment system</u>. Spurlock is planning to install a temporary treatment system to support the dewatering of the Spurlock Ash Pond as part of its closure and this system was scheduled to be installed by March 1, 2021. The Demonstration explains that impoundment dewatering flows will be routed to the temporary treatment system and then forwarded to the secondary lagoon prior to discharge. EKPC describes the temporary pond dewatering treatment system as consisting of geotextile tubes, chemical feed systems with in-line treatment of coagulants and polymers, and the temporary pumps and piping needed to support the rerouted flows. EKPC discusses sending the six different non-CCR wastestreams to the temporary treatment system but concludes this approach is not technically feasible. The Demonstration explains that the treatment system must be operated to maintain a steady-state flow to meet the discharge permit limits rather than operating with frequent fluctuations as the non-CCR wastestreams are generated. EKPC further

explains that Spurlock would need to design and procure complex chemical feed systems for each individual non-CCR wastestream and developing such a process would take longer to implement than the current proposed project.

EPA is proposing to determine that sending any of the non-CCR wastestreams to the temporary pond dewatering system was not a technically feasible option to implement prior to April 11, 2021. Given that the system was not designed to accept any of these non-CCR wastestreams, implementing modifications to tailor the system to a given non-CCR wastestream was not technically feasible to complete prior to April 11, 2021.

C. Analysis of Adverse Impacts to Plant Operations.

In the Part A Rule, EPA stated that it is important for the facility to include an analysis of the adverse impacts to the operation of the power plant if the CCR surface impoundment cannot be used after April 11, 2021. EPA stated that this is an important factor in determining whether the disposal capacity of the CCR surface impoundment in question is truly needed by the facility. EPA required that a facility provide analysis of the adverse impacts that would occur to plant operations if the CCR surface impoundment in question were no longer available. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*ii*). EPA is proposing to find that there would be adverse impacts to Spurlock if the Spurlock Ash Pond could not be used after April 11, 2021.

In Section 2.1.4 of the Demonstration, EKPC identifies the adverse impacts to plant operations if the Spurlock Ash Pond were not available for CCR and non-CCR wastestreams prior to implementing the planned actions to develop alternative capacity by November 30, 2022. These impacts are summarized below.

- EKPC states that Spurlock would have to cease operation of its four coal-fired boilers with a total generation capacity of 1,346 megawatts (net) because the Spurlock Ash

Pond is the primary component of the existing wastewater treatment system with sufficient capacity for the wastestreams.

- EKPC states that Spurlock provides over 50 percent of the required baseload demand for its customers. Spurlock additionally serves as the connection to the Regional Transmission Organization, Pennsylvania-New Jersey-Maryland Interconnection LLC (PJM). EKPC explains that the loss of Spurlock's four coal-fired boilers would compromise grid stability in the region, Spurlock's connection to PJM, and the production of power for over 1 million rural Kentuckians.
- EKPC states that ceasing operation of its four coal-fired boilers would compromise the operation of the International Paper facility located adjacent to Spurlock. This is because International Paper receives over 270,000 pounds per hour of co-generation steam from boiler Units 1 and 2 under a contractual arrangement.
- Prior to developing the planned alternative capacity, EKPC explains that Spurlock would not be able to maintain compliance with its discharge permit limits if the Spurlock Ash Pond were not available for use. Certain voluminous non-CCR wastestreams—stormwater and coal pile runoff sources—would continue to be generated even if EKPC ceased operation of its four coal-fired boilers. The other non-CCR wastestream ponds on-site do not have sufficient treatment capacity for these non-CCR wastestreams generated following precipitation events.

EPA is proposing to determine that EKPC's analysis is persuasive because the facility needs to continue using the Spurlock Ash Pond while alternative capacity is developed for non-CCR wastestreams. As discussed in the Demonstration, Spurlock would not be able to maintain compliance with applicable limits for pollutants that can be discharged to a water of the United

States under its KPDES permit if the Spurlock Ash Pond were not available for use after April 11, 2021. This is because stormwater and coal pile runoff flows would continue to be generated during precipitation events even if EKPC ceased operation of its four coal-fired boilers. While Spurlock operates a coal pile runoff pond, EKPC explains that the coal pile runoff pond is undersized relative to the runoff volume generated during the design storm event (i.e., 10-year, 24-hour storm). The Demonstration explains that 19.5 acre-feet of runoff is generated during the design storm event; however, the capacity of the coal pile runoff pond is only 10.8 acre-feet. Thus, to provide the needed treatment of these flow volumes prior to discharge to the river, the runoff flows must continue to be pumped to the Spurlock Ash Pond from the coal pile runoff pond. As discussed in Section IV.B.2 of this document, EPA disagrees with EKPC's claims regarding the broader impact of such an outage.

D. Site-Specific Analysis for the Alternative Capacity Selected.

To support the alternative deadline requested in the demonstration, the facility must submit a workplan that contains a detailed explanation and justification for the amount of time requested. 40 C.F.R. § 257.103(f)(1)(iv)(A). The written workplan narrative must describe each option that was considered for the new alternative capacity selected, the time frame under which each potential capacity could be implemented, and why the facility selected the option that it did. *Id*. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). The discussion must include an in-depth analysis of the site and any site-specific conditions that led to the decision to implement the selected alternative capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*).

EPA is proposing to determine that EKPC's decision to pursue a combination of technologies that together provide alternative capacity (i.e., a multiple technology approach) is a reasonable approach to address the bottom ash, fly ash, FGD blowdown, and non-CCR

wastestreams being managed in the Spurlock Ash Pond. EPA also recognizes that EKPC made significant progress toward initiating closure of Spurlock Ash Pond, including actions taken and completed prior to the 2018 *USWAG* decision. Based on these steps already completed, EPA agrees with EKPC's assertion that another technology approach could not be implemented more quickly than the selected option. This is because pursuing a different option at this stage would trigger the need to redo steps already completed (e.g., design work, securing regulatory approvals, placing equipment orders) or revisiting actions already completed (e.g., equipment installed), which would not be consistent with obtaining alternative capacity in the fastest technically feasible time frame. Therefore, EPA is proposing to determine that the Demonstration meets the minimum requirements for approval under 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*).

In the Demonstration, EKPC explains that it was working toward closure of the Spurlock Ash Pond prior to the 2018 *USWAG* decision, which triggered the requirement to close under the CCR regulations. This progress includes conducting engineering and design work, securing regulatory approvals, and placing orders for equipment with long lead times. These activities are described below.

In January 2016, EKPC initiated a technology evaluation of potential approaches to manage CCR and non-CCRs differently and to close the Spurlock Ash Pond. This evaluation focused on identifying technology options that would be consistent with the new requirements in both the 2015 CCR Rule and the 2015 Effluent Limitations Guidelines and Standards (ELG) Rule,[10] as well as other applicable state and local requirements. At that time in 2016, the Spurlock Ash Pond was receiving bottom ash sluice flows from boiler Units 1 and 2, FGD

[10] 80 FR 21302 (April 17, 2015) and 80 FR 67838 (November 3, 2015), respectively.

wastestreams from boiler Units 1 and 2, potential fly ash sluice flows during periods when the primary dry handling system was not operational, and the majority of Spurlock's non-CCR wastestreams, including site stormwater runoff.

EKPC explains that a multiple technology system approach is needed for these CCR and non-CCR wastestreams because no single technology approach would achieve compliance with the new CCR and ELG rule requirements. Table 2-4 in the Demonstration summarizes the alternatives considered for CCR wastestreams in this 2016 technical evaluation and whether the alternatives would be technically feasible at Spurlock. Later in 2016, EKPC selected a technology approach to address each wastestream and subsequently commenced the detailed design for the project. In November 2017, EKPC submitted its compliance plan to the Kentucky PSC for approval. As a utility, Spurlock is required to apply for a certificate of public convenience and necessity (CPCN) prior to beginning any major capital project. Spurlock's compliance plan included projects to convert wet handling systems to dry handling systems for bottom ash and fly ash, construct a new treatment system and thermal evaporation system for flue gas desulfurization blowdown, construct a new non-CCR wastewater basin for non-CCR flows, and install other supporting systems. See section 2.1.6 of the Demonstration. In May 2018, the Kentucky PSC granted a CPCN to Spurlock to construct the environmental compliance projects discussed in the compliance plan.

EKPC also moved ahead with procurement of new equipment with long lead times prior to the *USWAG* decision. For example, bid solicitations for the ash handling equipment were released in November 2017 and contracts were awarded in March 2018, with the ash handling equipment delivered in July 2019. For the FGD wastewater treatment equipment, bid

solicitations were released in December 2017 and contracts were awarded in April 2018, with equipment delivery in February 2019.

In addition, Spurlock was issued a revised KPDES discharge permit by Kentucky Division of Water in October 2018. The revised permit implements the requirements of the November 3, 2015, ELG rule revisions and requires that there be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023. The discharge permit also requires that discharges meet the effluent limitations for FGD wastewater by December 1, 2023.

Since the 2018 *USWAG* decision and prior to the regulatory deadline of April 11, 2021, EKPC was scheduled to complete actions to cease managing all continuous CCR wastestream flows to the Spurlock Ash Pond. The new equipment installations and related work were (or were planned to be) completed during the scheduled boiler outages in spring and fall of 2020. These actions include converting the bottom ash handling systems for boiler Units 1 and 2 to dry systems, constructing a new fly ash storage silo and installing related equipment, and constructing a new wastewater treatment system to process FGD wastestreams from boiler Units 1 and 2. These new systems required new piping, electrical and mechanical equipment, controls, and instrumentation, and this work is finished. Simultaneous with the end of continuous CCR flows to the Spurlock Ash Pond, EKPC initiated efforts to start lowering the pond water level as a precursor to the scheduled work to dewater and remove CCR waste from the Spurlock Ash Pond so that the new non-CCR wastewater basin can be constructed.

In summary, EPA is proposing to determine that the Spurlock Demonstration meets the minimum requirements for approval under 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*).

E. Justification for Time Requested.

Facilities must justify the amount of time requested in the demonstration as the fastest technically feasible time to develop the selected alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*iii*). The workplan must contain a visual timeline and narrative discussion to justify the time request. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). The visual timeline must clearly indicate how each phase and the steps within that phase interact with or are dependent on each other and the other phases. Additionally, any possible overlap of the steps and phases that can be completed concurrently must be included. This visual timeline must show the total time needed to obtain the alternative capacity and how long each phase and step is expected to take. The detailed narrative of the schedule must discuss all the necessary phases and steps in the workplan, in addition to the overall time frame that will be required to obtain capacity and cease receipt of waste. The discussion must include 1) why the length of time for each phase and step is needed, 2) why each phase and step must happen in the order it is occurring, 3) a discussion of the tasks that occur during the specific step, and 4) the tasks that occur during each of the steps within the phase. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). This overall discussion of the schedule assists EPA in understanding whether the time requested is warranted. Finally, facilities must include a narrative on the progress made towards the development of alternative capacity as of the time the demonstration was compiled. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*4*). This section of the Demonstration is intended to show the progress and efforts the facility has undertaken to work towards ceasing placement of waste in the CCR surface impoundment and to determine whether the submitted schedule for obtaining alternative capacity was adequately justified at the time of submission.

After review of the Demonstration, EPA is proposing to conclude that EKPC has adequately justified the amount of time sought in its request and that developing alternative capacity by November 30, 2022, represents the fastest technically feasible time to implement the multiple technology system approach. Because EKPC has completed installing new equipment and systems allowing for the cessation of continuous CCR flows to Spurlock Ash Pond prior to the regulatory deadline of April 11, 2021, EPA is focusing its analysis on the justification provided for the task of constructing the WMB Pond. With the exception of the design work and securing regulatory approvals that were completed concurrent with the new CCR projects prior to the end of 2018, the construction of the WMB Pond is an ongoing project in 2021 and 2022 and is summarized below.

At the time EKPC submitted its Demonstration, the engineering and design and contractor selection phases of the new non-CCR wastewater basin project had been completed. Simultaneously with the cessation of continuous CCR flows to the Spurlock Ash Pond in September 2020, EKPC began lowering water levels in the Spurlock Ash Pond as a precursor to dewatering and removing CCR from the impoundment. Due to the facility space limitations and siting considerations explained in the Demonstration, EKPC concluded that the best location for the new non-CCR wastewater basin is within the western portion of the existing footprint of the Spurlock Ash Pond after the CCR has been completely removed from that portion of the impoundment. As noted above, the new 12-acre non-CCR wastewater basin is called the “Water Mass Balance Pond” or WMB Pond and will consist of a primary 3-acre basin and a secondary 9-acre basin with a total storage volume of 76.2 million gallons (234 acre-feet).

Most tasks supporting the construction of the WMB Pond are scheduled to take place over two construction seasons. EKPC explains that the main steps scheduled to be completed

during the 2021 construction season are to dewater the area where the WMB Pond will be located, excavate CCR from this area, and construct the dike for the WMB Pond's primary basin. One initial task supporting the dewatering step is to install a temporary water treatment system to treat flows from the dewatering of the western portion of the Spurlock Ash Pond. These treated flows will be forwarded to the secondary lagoon (an on-site non-CCR wastewater pond) and subsequently discharged pursuant to Spurlock's KPDES permit. Another task scheduled to support the dewatering step is to install a temporary berm to separate the eastern and western portions of the Spurlock Ash Pond. This temporary berm is needed because the eastern portion of the impoundment will continue to receive non-CCR wastestreams such as site stormwater (and any intermittent flows of FGD during periods of upset conditions) during construction of the WMB Pond. These tasks were scheduled to take place between early January 2021 and the end of April 2021.

Dewatering and CCR removal activities were scheduled to be performed from early March to early November 2021. EKPC explains that approximately 400,000 cubic yards of CCR will need to be sufficiently dewatered before being moved to its CCR landfill. Another task planned to be completed during the 2021 construction season is to place the fill material in the western portion of the Spurlock Ash Pond that will be used to construct a dike for the WMB Pond's primary basin. This task was scheduled to be initiated in mid-September 2021 after dewatering is complete and it was scheduled to be completed by mid-November 2021. As shown on the visual timeline in Appendix B of the Demonstration, this fill placement task will be completed concurrently with the ongoing CCR removal task. This season of construction was scheduled to end in mid-November 2021 because, as EKPC explains in the Demonstration, it is difficult to perform heavy construction and earthwork in the winter months.

For the 2022 construction season, the main steps include constructing the dike and dike appurtenances for the WMB Pond's secondary basin, installing the new liner system for the WMB Pond (both the primary and secondary basins), and continuing the removal of CCR material from the eastern portion of the Spurlock Ash Pond as part of its closure. The Spurlock narrative describes several tasks for the construction of the secondary basin dike and its appurtenances. Beginning in March 2022 and lasting seven weeks, EKPC is scheduled to place the fill material for construction of the dike for the WMB Pond's secondary basin. Concurrent with the start of this fill activity, work to construct the pump outlet structure for the WMB Pond will begin. With the new primary basin dike installed by early May 2022, work to line the primary and secondary basins and complete work on various dike appurtenances will commence until the new WMB Pond is completed by November 2022. The Demonstration identifies the tasks that will be completed, including preparing the subgrade of the primary and secondary basins for the liner, installing the geomembrane, placing a protective granular material layer over the liner, installing a concrete armor lining in the primary basin, installing a channel lining cover in the secondary basin, and installing piping and pumps. Construction of the WMB Pond is scheduled to be completed and the pond put in service by November 30, 2022, at which point all non-CCR wastestreams will be directed to the WMB Pond instead of the Spurlock Ash Pond. The Demonstration also states that dewatering and removal of CCR materials from the eastern portion of the Spurlock Ash Pond will continue during the 2022 construction season between mid-March and mid-November. See Demonstration section 2.3 and Appendix B.

EPA has evaluated EKPC's visual timeline and narrative discussion supporting the time extension request of November 30, 2022, and the Agency is proposing to determine that the requested date to develop alternative capacity for all CCR and non-CCR wastestreams appears to

meet the standard for approval under 40 C.F.R. § 257.103(f)(1)(iv)(A)(*2*) and (*3*). EPA bases this proposed determination on the following:

- Spurlock was scheduled to have completed all actions necessary to cease directing continuous flows of bottom ash, fly ash, and FGD materials to the Spurlock Ash Pond prior to the regulatory deadline of April 11, 2021.
- EKPC initiated actions to lower water levels in the Spurlock Ash Pond (and thus began taking steps to construct the new WMB Pond) simultaneously with the cessation of all continuous flows of CCR to the Spurlock Ash Pond in September 2020.
- Taking the entire 2021 construction season to install the new temporary pond dewatering treatment system and dewater and remove approximately 400,000 cubic yards of CCR from the location where the new WMB Pond will be constructed appears to be consistent with the standard of the fastest technically feasible time to complete these activities. To move 400,000 cubic yards of CCR to the Spurlock Station Landfill from the Spurlock Ash Pond, EPA estimates that approximately 26,700 trucks with a hauling capacity of 15 cubic yards would be required. This number of trucks equates to an average of nearly 150 truckloads per workday over the 180-day duration of the CCR removal task.
- EKPC began lowering the water levels of the Spurlock Ash Pond at the end of September 2020 and they estimate completing construction of the WMB Pond by the end of November 2022. Although the time to construct the WMB Pond will take longer than EPA estimated to build a new non-CCR wastewater basin in the CCR Part A final rule, EPA reviewed Spurlock's construction schedule and did not identify any

construction step durations as unreasonable or inconsistent with the analyses in the final rule. In the final rule, EPA determined that the average time frame to obtain alternative capacity by constructing a new non-CCR wastewater basin was 23.5 months. 85 FR at 53534 (August 20, 2020).

- The Demonstration also describes the anticipated worker schedules for the alternative capacity projects. For example, scheduled efforts in 2020 and 2021 to install over 1 million feet of piping and electrical supply needed for the dry ash handling conversion and the new FGD treatment system are based on the construction contractor working five 10-hour days per week. Work schedules during the fall 2020 outage for critical path construction tasks to tie in the new dry ash handling system were to be supported by a multishift schedule operating 24-hours per day, seven days per week. Finally, construction of the new WMB Pond for non-CCR wastestreams and closure of the Spurlock Ash Pond were to be based on a 50-hour per week schedule, which could include working weekends when necessary to address delays (e.g., delays caused by weather). EPA is concluding that these work schedules are reasonable and consistent with developing alternative capacity in the fastest technically feasible time.

F. Evaluation of EKPC's Compliance Documentation.

The Part A Rule requires that a facility must be in compliance with all the requirements in 40 C.F.R. part 257, subpart D in order to be approved for an extension to the cease receipt of waste deadline. 40 C.F.R. § 257.103(f)(1)(iii). Various compliance documentation must be submitted with the demonstration for the entire facility, not just for the CCR surface impoundment in question. 40 C.F.R. § 257.103(f)(1)(iv)(B).

The first group of compliance documents required to be included in the Demonstration are related to documentation of the facility's current compliance with the requirements governing groundwater monitoring systems. The Agency required copies of the following documents: 1) map(s) of groundwater monitoring well locations (these maps should identify the CCR units as well); 2) well construction diagrams and drilling logs for all groundwater monitoring wells; 3) maps that characterize the direction of groundwater flow accounting for seasonal variation; 4) constituent concentrations, summarized in table form, at each groundwater monitoring well monitored during each sampling event; and 5) description of site hydrogeology including stratigraphic cross-sections. 40 C.F.R. § 257.103(f)(1)(iv)(B)(*2*) through (*4*).

The second group of documents EPA required was the facility's corrective action documentation, if applicable, and the structural stability assessments. A facility must submit the following documentation: the corrective measures assessment required at 40 C.F.R. § 257.96; progress reports on remedy selection and design; the report of final remedy selection required at 40 C.F.R. § 257.97(a); the most recent structural stability assessment required at 40 C.F.R. § 257.73(d); and the most recent safety factor assessment required at 40 C.F.R. § 257.73(e). 40 C.F.R. § 257.103(f)(1)(iv)(B)(*5*) through (*8*).

EPA is proposing to find that EKPC has not adequately demonstrated compliance with a number of the CCR Rule's groundwater monitoring requirements. For each of these noncompliance issues, EPA is also proposing additional information that EKPC could submit to demonstrate compliance or actions EKPC could take to come into compliance. This information and actions will be the basis for the conditions EPA is proposing for the conditional approval (see Section IV.A below).

1. Groundwater Monitoring Compliance.

Reports Reviewed to Evaluate Compliance.

The regulations require facilities to submit several groundwater monitoring compliance documents as part of their demonstrations so that EPA can thoroughly evaluate the groundwater monitoring network and the site hydrogeology for every CCR unit at the facility. EPA evaluated the documentation EKPC provided in the Demonstration for the three CCR units, the Spurlock Ash Pond (surface impoundment), Spurlock Station Landfill (landfill), and Peg's Hill Landfill (landfill). EPA also reviewed the 2017 through 2019 Annual Groundwater Monitoring and Corrective Action (GWMCA) Reports for the Spurlock Ash Pond and the Spurlock Station Landfill. Specific issues identified in the compliance review for each CCR unit are discussed below.

While the Demonstration was determined to be complete, EPA's review was made more difficult by the fact that the Annual GWMCA Reports for both the Spurlock Ash Pond and the Spurlock Station Landfill failed to include monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98, as required by 40 C.F.R. § 257.90(e)(3). Groundwater elevation measurements were missing, and no laboratory analytical reports or information about statistical analyses were included.[11] As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3).

The purpose of the Annual GWMCA Report is to provide the most recently obtained groundwater and corrective action information as well as allow review for compliance with the requirements. The groundwater monitoring provisions in 40 C.F.R. §§ 257.90 through 257.95 include numerous requirements (e.g., standards for lowest achievable quantitation limits, requirement to analyze samples for total recoverable metals, performance standards for various

[11] This information is provided in a limited scope in the Alternative Source Demonstration (see Annual GWMCA Report, January 31, 2019, Appendix C).

statistical methods). It is the owner or operator's responsibility to demonstrate that they are in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents the EPA, states, or other stakeholders from evaluating compliance.

Additionally, several extraction wells located in the immediate vicinity of the Spurlock Ash Pond seem to have the potential to significantly influence groundwater flow conditions, but information about their extraction rates or operational status has not been provided. The fact that this information was not available made the compliance review inconclusive for some issues.

In order to address this noncompliance, EPA is proposing that EKPC must amend past Annual GWMCA Reports to contain all monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98, including groundwater elevation measurements, statistical analyses (i.e., data used in the analyses, normality assessment, results, confidence levels, and any limitations of the analysis), laboratory analysis reports for all monitoring data, and information about drawdown rates and operating status of extraction wells near the Spurlock Ash Pond.

Spurlock Ash Pond.

EPA is proposing to determine that EKPC has not adequately demonstrated compliance with the regulations for the Spurlock Ash Pond. EKPC failed to demonstrate the groundwater monitoring system is designed in compliance with criteria in 40 C.F.R. § 257.91(b) and that it accurately represents the quality of groundwater and monitors all contaminant pathways in accordance with 40 C.F.R. § 257.91(a)(2). EKPC also failed to conduct assessment monitoring in accordance with 40 C.F.R. § 257.95(b) and (d)(1) by: 1) not including all constituents that were detected in May 2018 in the July 2018 sampling event; 2) failing to conduct semi-annual sampling in January 2019; and 3) failing to conduct annual sampling in May 2019. Additionally, EKPC failed to report data using the lowest quantitation limits than can be reliably achieved by

the laboratory, as required by 40 C.F.R. § 257.93(g)(5). Finally, EPA has concerns about the independence of samples collected from the same well within a short period of time for the baseline monitoring required by 40 C.F.R. § 257.94(b).

EKPC failed to demonstrate compliance with 40 C.F.R. § 257.91(b) by failing to incorporate the effects of extraction wells into groundwater flow maps to accurately characterize groundwater flow. Five extraction wells (#7, #8, #9, #10, and #11) are located near the southern border of the Spurlock Ash Pond.[12] Extraction wells can pump groundwater at high volumes and rates, lowering the groundwater elevation at the point where the extraction well is located. This lowered groundwater elevation is known as drawdown. Drawdown from extraction wells can cause nearby groundwater to flow toward the extraction well from all directions; this would be depicted as a small circular area on a groundwater flow map where groundwater flows into the center of the circle (i.e., a cone of depression). Because the extraction wells are near the southern boundary of the Spurlock Ash Pond, the extraction wells could significantly alter groundwater flow direction and rate at the waste boundary. Pumping rates and drawdown levels must be incorporated into groundwater flow maps to accurately characterize groundwater flow at the Spurlock Ash Pond.

Because of this failure to characterize groundwater flow conditions accurately, EKPC has not demonstrated that the groundwater monitoring system at the downgradient waste boundary accurately represents the quality of groundwater passing the boundary in the uppermost aquifer and monitors all potential contaminant pathways. 40 C.F.R. § 257.91(a)(2). Pumping at extraction wells #7, #8, #9, and #10 is expected to strongly draw groundwater directly to the extraction wells from the Spurlock Ash Pond, along a straight line from the closest point on the

[12] Demonstration, Figure 5 in Appendix C8.

southern edge of Spurlock Ash Pond to each extraction well. However, no monitoring wells exist along the paths between the closest points at the southern edge of the Spurlock Ash Pond and extraction wells #7, #8, #9, and #10. In fact, the downgradient monitoring wells (MW-5, MW-6, MW-7, and MW-8) are all placed at least approximately 500 feet away from these direct paths. These unmonitored portions of the downgradient waste boundary leave direct pathways of potential contaminant migration unmonitored, and this creates the potential for contaminant migration to the extraction wells without detection by the groundwater monitoring system. Therefore, EPA believes all potential contaminant pathways may not be monitored. EPA will be able to complete a more conclusive analysis after groundwater flow conditions are fully characterized, including consideration of the influence of the extraction wells.

EKPC failed to conduct assessment monitoring in accordance with 40 C.F.R. § 257.95(b) and (d)(1). EKPC has been operating an assessment monitoring program since May 2018. In assessment monitoring, annual sampling is required for all constituents in Appendix IV to 40 C.F.R. part 257. 40 C.F.R. § 257.95(b). Within 90 days after that, and semi-annually thereafter, sampling is required for all constituents in Appendix IV to 40 C.F.R. part 257 that were detected in the annual sampling event, as well as all constituents in Appendix III to 40 C.F.R. part 257. 40 C.F.R. § 257.95(d)(1).

In May 2018, EKPC sampled the Spurlock Ash Pond groundwater monitoring system for all the constituents in Appendix IV to 40 C.F.R. part 257. Arsenic, barium, chromium,[13] molybdenum, thallium, and radium 226/228 were detected in that sampling event. In July 2018, EKPC sampled the Spurlock Ash Pond groundwater monitoring system for all the constituents in Appendix III to 40 C.F.R. part 257 and for arsenic, barium, cobalt, molybdenum, thallium, and

[13] Chromium was detected in May 2018 at MW-03 at 2 micrograms/liter.

radium 226/228. Chromium was required to be included in the July 2018 sampling event, but it was not. 40 C.F.R § 257.95(d)(1). The semi-annual sampling event required six months later, in January 2019, was not conducted. The annual sampling event required in May 2019 was not conducted.

The next time EKPC sampled the Spurlock Ash Pond groundwater monitoring system was in June 2019; however, all the constituents in Appendix IV to 40 C.F.R. part 257 were not included. Instead, constituents included in the June 2019 sampling event were the same as in the July 2018 semi-annual sampling event. The next time EKPC sampled for all the constituents in Appendix IV to 40 C.F.R. part 257, as required annually by 40 C.F.R § 257.95(b), was in September 2019.

It is not possible to obtain a groundwater sample in 2021 to replace one that was not obtained in January or May 2019. However, given that the CCR regulations rely on statistical analyses of data sets, obtaining additional samples now may increase statistical strength of the data set in assessing whether a release has occurred from the unit. For this reason, EPA is proposing that EKPC needs to develop a plan to conduct additional assessment monitoring to address this noncompliance as a condition of this approval.

A quantitation limit is a concentration below which precise analytical results for a particular sample are not reported. The regulation at 40 C.F.R. § 257.93(g)(5) requires that any quantitation limit used in a statistical analysis, "…shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility." Elevated quantitation limits are prohibited by the CCR regulations, in part because they can artificially elevate background characterization or mask detections of constituents in annual assessment monitoring results that would otherwise

require monitoring of those constituents in semi-annual assessment monitoring events. In all cases, the quantitation limit used in compliance reports must be below the regulatory limit (i.e., the groundwater protection standard) or compliance with the standard cannot be assessed. EKPC failed to report monitoring data with quantitation limits that comply with 40 C.F.R. § 257.93(g)(5) on multiple occasions.

For example, lithium results at MW-01 on October 12, 2016,[14] were reported as below a quantitation limit of 50 micrograms per liter. Lithium results from all wells in the May 2018 sampling event were reported at the same quantitation limit.[15] This is an unusually high quantitation limit for lithium; the reason for the high quantitation limit is not explained. EPA's experience with reviewing analytical data for metals in groundwater is that much lower quantitation limits, well below the groundwater protection standards, are typically achievable. EPA is proposing that to address this noncompliance, future groundwater samples must use the lowest quantitation limits that can be reliably achieved, supported by quality assurance documentation in the Annual GWMCA Reports that adequately explains instances where expected quantitation limits could not be met.

EPA is concerned that samples collected for the initial baseline monitoring required by 40 C.F.R. § 257.94(b) may not be independent. When the baseline monitoring data required by 40 C.F.R. § 257.90(b)(1) were collected in 2016 and 2017, sampling events were sometimes less than 30 days apart.[16] At an upgradient piezometer (PZ-7), groundwater flow was measured to be approximately 16.8 feet per year.[17] This is equivalent to travelling 1.38 feet in 30 days.

[14] Annual GWMCA Report, January 31, 2018, Appendix B.
[15] Annual GWMCA Report, January 31, 2019, Appendix B.
[16] Sampling occurred on December 28, 2016; January 17, 2017; February 13, 2017; March 21, 2017; April 24, 2017; May 22, 2017; June 19, 2017; July 17, 2017; August 7, 2017; and August 21, 2017.
[17] 2018 Annual GWMCA Report, January 31, 2019, p.3

Therefore, groundwater samples collected at the same location on two sampling dates less than 30 days apart may not be independent of each other as required by 40 C.F.R. § 257.94(b). EPA is proposing that to address this noncompliance EKPC must document in the revised 2018 Annual GWMCA Report that all statistical analyses only include groundwater samples that are independent.

Spurlock Station Landfill.

EPA has evaluated the documentation provided by EKPC in the Demonstration and in the 2017 through 2019 Annual GWMCA Reports. EPA is proposing to determine that, for the Spurlock Station Landfill, EKPC has failed to meet the requirements to 1) establish a groundwater monitoring system that represents the quality of groundwater passing the downgradient waste boundary and monitor all potential contaminant pathways; 2) obtain data with the lowest quantitation limits than can be reliably achieved by the laboratory; and 3) either prepare alternative source demonstrations (ASDs) that demonstrate that an alternative source caused detected statistically significant increases (SSIs), or initiate an assessment monitoring program.

Due to conflicting information in the documentation reviewed, EPA is unable to determine whether EKPC has established a groundwater monitoring system that represents the quality of background groundwater unaffected by leakage from a CCR unit. It is not clear whether sampling data obtained from the groundwater monitoring system are analyzed for SSIs by comparing downgradient data with upgradient data, or whether intrawell comparisons are used. If intrawell comparisons are used, the qualified Professional Engineer (P.E.) certification of the groundwater monitoring system required by 40 C.F.R. § 257.91(f) does not accurately reflect

the current groundwater monitoring system, where downgradient compliance wells would also serve as background wells.

The Spurlock Station Landfill groundwater monitoring system consists of two upgradient background wells (MW-6, MW-7) and three downgradient wells (MW-2B, MW-3B, MW-5B). Groundwater flow direction is depicted[18] as generally northwest to southeast, from the upgradient wells to the downgradient wells, but no groundwater elevation measurements are depicted along the northeastern or southern borders of the unit, each of which extend beyond half a mile in length. Sufficient groundwater elevations are not depicted to support the groundwater contours and flow direction arrows; groundwater flow direction may have been inadequately characterized due to lack of data.[19]

If groundwater flow characterization is correct, it appears that portions of the downgradient waste unit boundary are not being monitored. These include the southeastern boundary (approximately 1,200 feet); portions of the southern boundary (approximately 800 feet); and two locations on the eastern portion of the northeastern boundary (the westernmost portion is approximately 900 feet, the easternmost is approximately 400 feet). These locations are marked on Spurlock Figure 1 in the docket for this action.[20] The unmonitored distance along the downgradient boundary of the unit allows contaminant pathways to remain unmonitored.

Additionally, the downgradient wells (MW-2B, MW-3B, MW-5B) are located approximately 600 feet beyond the waste unit boundary. The placement of compliance wells 600 feet beyond the waste unit boundary delays detection of any releases from the unit. All

[18] Appendix D3 to the Demonstration.
[19] See February 15, 2017, sampling data in the 2017 Annual GWMCA Report.
[20] Memorandum from F. Behan, EPA to EPA Docket No. EPA-HQ-OLEM-2021-0595. Spurlock Figure 1. November 2021.

downgradient wells must be installed at the waste boundary, and all potential contaminant pathways must be monitored. 40 C.F.R. § 257.91(a)(2).

EPA is proposing that to address this noncompliance EKPC must place wells at the portions of the downgradient boundaries identified on Spurlock Figure 1 in the docket, with appropriate spacing so that all potential contaminant pathways are monitored. The number of wells and spacing must be determined based on criteria in 40 C.F.R. § 257.91(b)(1) and (b)(2), which include groundwater flow rate and direction, taking into account seasonal or temporal fluctuations. Final decisions regarding placement of monitoring wells must be based on adequate characterization of groundwater flow direction and rate across the unit and in the area immediately surrounding the unit.

As with the Spurlock Ash Pond, some quantitation limits in the Annual GWMCA Reports for the Spurlock Station Landfill fail to meet the requirement in 40 C.F.R. § 257.93(g)(5) to be the lowest reliably achievable. For example, in the 2018 Annual GWMCA Report, thallium results at MW-7 on August 2017 were reported as below a quantitation limit of 2 micrograms per liter.[21] This is the same as the maximum contaminant level (MCL) for thallium. The reason for the elevated quantitation limit is not explained. EKPC must analyze groundwater data using quantitation limits that are the lowest that can be reliably achieved by the laboratory. This is also a reporting discrepancy; in the Demonstration, the thallium results for this same sample were reported as 0.1 micrograms per liter.[22] The change in reported results is not explained. Revision of the Annual GWMCA Reports to include analytical laboratory reports will resolve this discrepancy.

Review of Alternative Source Demonstrations (ASDs)

---

[21] See Annual GWMCA Report, January 31, 2018, Appendix B.
[22] See Demonstration Appendix C4, p. 5 of 40.

If it is determined that there was an SSI over background levels for one or more of the constituents in Appendix III to 40 C.F.R. part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD to show that a source other than the unit was the cause of the SSI. 40 C.F.R. § 257.94(e)(2). If a successful ASD for an SSI is not completed within 90 days, an assessment monitoring program must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSI. To rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD requires conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

SSIs of constituents in Appendix III to 40 C.F.R. part 257 were detected in November 2017 (sulfate at MW-3B), May 2018 (sulfate at MW-3B), and June 2019 (total dissolved solids, or TDS, in MW-2B). For each SSI, an ASD was conducted. All the ASDs concluded that the Spurlock Station Landfill was not the source of the SSIs. No alternative source was identified in any of the ASDs other than natural variability. EPA is proposing to determine that the ASDs did not provide sufficient evidence to substantiate that natural variability was the source of the SSIs and the Spurlock Station Landfill was not.

Generally, the ASDs attribute SSIs to natural variability and claim that the SSIs could not have come from the landfill. The following lines of evidence are presented: 1) there is not a continuous hydraulic connection between the upgradient and downgradient wells;[23] 2) the geochemical composition of groundwater in downgradient wells cannot be derived by combining background groundwater with leachate; and 3) SSIs were due to natural variability caused by varied oxygenation and recharge rates as well as low hydraulic conductivity.

[23] See Annual GWMCA Report, January 31, 2019, Appendix C, p.7.

The conclusion that there is not a continuous hydraulic connection between the upgradient and downgradient wells is unsupported by data. Soil borings depicted in the geologic cross-sections are not deep enough to find groundwater, based on groundwater elevations at surrounding wells.[24] For example, boring IW-5[25] did not encounter groundwater, but it was only advanced to an elevation of 700 feet. IW-5 is located between points at which groundwater is encountered at 650 feet and 760 feet, so groundwater could have been encountered at IW-5 below 700 feet. Because the boring at IW-5 did not go deeper, the depth to groundwater is unknown. Similarly, other soil borings presented as evidence that groundwater is not present below the unit (S-3/W-3 and S-6/W-6) are not deep enough to have encountered groundwater that may be present based on groundwater elevations measured at surrounding wells.

The ASDs also contend that the geochemical composition in downgradient wells proves the landfill cannot be the source of the SSIs. The premise of this conclusion is that the geochemistry of downgradient groundwater should represent addition of leachate, collected from a portion of the landfill, with background groundwater in an unspecified proportion. These comparisons are inconclusive for multiple reasons, including that the majority of the Spurlock Station Landfill is not lined and covered by the leachate collection system,[26] so the leachate is not representative of the majority of the landfill.

Another reason the geochemistry evidence is inconclusive is that it assumes no chemical reactions happen in the aquifer matrix below the landfill. Chemical process (e.g., ion exchange, precipitation) may occur in the aquifer below the unit as groundwater travels from upgradient to downgradient wells. The ion ratios presented compare boron, which is less reactive, with sulfates

[24] Annual GWMCA Report, January 31, 2019, Appendix C, July 2018 ASD, Figures 3A, 3B, 3C.
[25] 2018 Annual GWMCA Report, January 31, 2019, Figure 3A.
[26] Annual GWMCA Report, January 31, 2020, section 2.3.

and chlorides, which are more likely to react. There is no reason to think the ratio of boron to sulfates or chlorides in the leachate should be maintained in the groundwater until it travels to the downgradient well. This is particularly true if constituents in Appendix IV to 40 C.F.R. part 257 are present due to a release from the landfill, because they may react with sulfates or chlorides. The resulting compounds could fix themselves onto the soils underground; if so, sulfate or chloride concentrations could decrease as these reactions occur. Additionally, there is no reason to assume that leachate and downgradient groundwater should be geochemically similar at this landfill. Other geochemical differences between leachate and the groundwater samples (e.g., oxidation reduction potential, dissolved oxygen[27]) can affect the solubility and leachability of chemicals. Leachate composition may be different than contaminated groundwater because of longer contact time and lower ratio of water to solid material.

Further, isotopic ratios of boron, sulfur, oxygen, and hydrogen were measured in the leachate and groundwater to identify where the water in the downgradient wells is coming from. Isotopic ratios are sometimes more reliable than ionic ratios because the ratio of heavy isotopes to lighter isotopes will generally remain unchanged. If reactions occur, the isotopes will react at similar rates. In the data provided in the ASD for the July 2018 SSI,[28] the isotopic ratios of boron, sulfur, oxygen, and hydrogen measured in the downgradient wells are all very similar to the ratios measured in the leachate. This indicates that the water in the downgradient wells could be from the same source as the leachate, suggesting that the SSIs are not definitively from a separate source.

The ASDs did not provide sufficient evidence that natural variability in groundwater is the cause of the SSIs at Spurlock Station Landfill. As discussed previously, the current

[27] 2018 Annual GWMCA Report, January 31, 2019, Appendix C, Table 2.
[28] 2018 Annual GWMCA report, July 31, 2019 Appendix C, Table 2.

monitoring well system is insufficient to characterize groundwater at the downgradient boundary. The lateral area that would need to be characterized to support a claim of natural variability would be upgradient of the landfill, in order to demonstrate the variability is occurring naturally rather than due to impacts from the landfill. The ASD for the June 2019 SSI reported that groundwater samples collected adjacent to the landfill also showed substantial variability of up to an order of magnitude for several Appendix III constituents, but no data or sampling locations are provided in the ASD.

Additional lines of evidence were presented in ASDs to demonstrate that downgradient natural variability is occurring. It was suggested that wells screened deeper below the ground surface have different groundwater chemistry than wells screened closer to the ground surface because recharge was happening faster at shallower wells. Recharge occurs as precipitation infiltrates from the land surface down through the soil until it reaches the water table. Shallower wells will receive recharge from infiltrating precipitation faster than deeper wells simply because they are closer to the source. However, EPA finds these lines of evidence to be unpersuasive because groundwater is insufficiently characterized to make this conclusion. It is worth noting that, despite an insufficient number of downgradient wells and monitoring of all potential contaminant pathways from the unit, SSIs have been detected at multiple wells for multiple contaminants. To rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD must be supported by direct evidence that these detections are the result of a source other than the CCR unit. The ASDs fail to demonstrate that natural variability is the source of the SSIs.

EPA is proposing to determine that the lines of evidence presented in the ASDs are inconclusive and that Spurlock Station Landfill is subject to assessment monitoring requirements

pursuant to 40 C.F.R. § 257.95. EPA is proposing that to address this noncompliance EKPC needs to initiate an assessment monitoring program at this unit.

Characterization of Background Groundwater Quality

The Demonstration provides conflicting information about how background groundwater quality has been characterized. Based on claims of natural variability in groundwater quality in the ASDs, EKPC has stated that the two upgradient wells in the groundwater monitoring system are not representative of background groundwater quality at the landfill. In April 2019, EKPC revised the P.E. certification of statistical methods required by 40 C.F.R. § 257.93(f)(6), to reflect the use of upper prediction limits and intrawell comparisons.

EKPC reported switching to intrawell comparisons in 2019.[29] However, it does not appear the groundwater monitoring system P.E. certification required by 40 C.F.R. § 257.91(f) has been modified since 2017 to change the designation of background wells. Reports submitted after that time,[30] including the Demonstration, continue to describe the groundwater monitoring system as consisting of two upgradient wells (MW-6 and MW-7) and three downgradient wells (MW-2B, MW-3B, and MW-5B/5R). The designation of separate upgradient background wells and downgradient wells is inconsistent with intrawell comparisons, because such an approach would use background and compliance data taken from the same well.

This conflicting information in reports, combined with the lack of reported information about statistical analyses conducted in the Annual GWMCA Reports, make it difficult for EPA to determine whether the requirements to characterize background in accordance with 40 C.F.R. § 257.91(a)(1) and in accordance with statistical procedures required by 40 C.F.R. § 257.93 have been met.

[29] Demonstration, p. 3-4.
[30] 2019 Annual GWMCA Report.

Intrawell comparisons are not simply a statistical method; in the CCR regulations, they are an approach to background characterization. Intrawell data comparisons use samples taken at different times from the same well to characterize both background groundwater quality and downgradient compliance groundwater quality. This means downgradient compliance wells would also serve as background wells. Alternatively, interwell data comparisons use samples taken from different wells—upgradient or sidegradient wells characterize background groundwater quality and downgradient wells characterize downgradient groundwater quality.

The CCR regulations do not mention interwell or intrawell comparisons specifically; instead, they establish requirements for characterizing background. Background groundwater quality is to be established in an upgradient well, unless a groundwater flow gradient does not exist, or it can be shown that groundwater samples from a well that is not upgradient of the CCR unit would characterize background groundwater quality as accurately or more accurately than samples from an upgradient well. 40 C.F.R. § 257.91(a). This indicates a strong preference for interwell comparison, which would necessarily be used when background is established in any well other than a downgradient compliance well (i.e., an upgradient or side gradient well).

However, the CCR regulations allow background to be established in a well that is not upgradient of the unit (i.e., in a downgradient compliance well) if the criteria in 40 C.F.R. § 257.91(a)(1)(i) and (ii) are met. It must be demonstrated that the data from the non-upgradient well can characterize background groundwater quality as accurately or more accurately than data from an upgradient well. It also must be demonstrated the data were gathered when the well was known to be uncontaminated by the CCR unit.[31] This generally means that background data used in intrawell comparisons must be obtained prior to placement of CCR in the unit.

[31] See 40 C.F.R. § 257.91(a)(1) and "March 2009 Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance" ("Unified Guidance"). p. 17-22.

EKPC has not provided sufficient information for EPA to determine whether this standard has been met. The statistical method P.E. certification does not indicate when background samples were obtained from the compliance wells for use in intrawell comparisons. It does not explain how it was determined that they are as or more representative of background groundwater quality than upgradient samples, or how they are known to be uncontaminated by the Spurlock Station Landfill.[32] 40 C.F.R. § 257.91(a)(1), 40 C.F.R. § 257.93(f)(6).

To obtain this conditional approval, EPA is proposing that EKPC: 1) assures characterization of groundwater flow direction around the unit supported by sufficient data points; 2) identifies the locations of wells that characterize background conditions; 3) adds downgradient wells at the downgradient waste unit boundary with sufficient number and spacing to monitor all potential contaminant pathways; 4) provides P.E. certifications for the revised groundwater monitoring system and the statistical approach; and 5) conducts assessment monitoring that includes sampling new wells on an accelerated schedule to accumulate baseline data.

Peg's Hill Landfill.

EKPC explains that Peg's Hill Landfill is a new CCR landfill that has yet to receive any CCR. Collection of baseline groundwater samples began in early 2019 and EKPC will initiate the detection monitoring program pursuant to 40 C.F.R. § 257.94 when Peg's Hill Landfill begins to receive CCR. EPA has evaluated the documentation provided by EKPC and is proposing to determine that the groundwater monitoring system does not meet the requirements of 40 C.F.R. § 257.91.

[32] Unified Guidance, pages 17-22 and 18-2.

EPA's concerns with this groundwater monitoring system are similar to those at the Spurlock Station Landfill—there seems to be insufficient groundwater elevation data to adequately characterize groundwater flow conditions (i.e., flow direction and rate) and downgradient wells MW-05, MW-04, and MW-03 are not located at the boundary.[33] Some of the investigative borings, such as IW-2 and IW-7, do not appear to be deep enough to determine the elevation of groundwater present at those locations, based on the depths at which groundwater has been encountered at surrounding locations.[34] Characterization of groundwater flow is needed to support the design of the monitoring well system and the placement of upgradient and downgradient wells. Downgradient wells must be installed at the downgradient boundary of the landfill and the number and spacing of wells must be determined in accordance with 40 C.F.R. § 257.91(b)(2) and monitor all potential contaminant pathways. 40 C.F.R. § 257.91(a)(2).

To bring this facility into compliance, EPA is proposing that EKPC: 1) assure characterization of groundwater flow direction around Peg's Hill Landfill, supported by sufficient data points; 2) identify the locations of wells that characterize background conditions; 3) place downgradient wells at downgradient waste boundary with sufficient number and spacing to monitor all potential contaminant pathways; and 4) provide a P.E. certification for the revised groundwater monitoring system.

2. Structural Stability and Factor of Safety Assessments

The Spurlock Ash Pond is subject to the requirements to conduct periodic structural stability assessments and periodic safety factor assessments pursuant to 40 C.F.R. § 257.73(d) through (f) due to the dike height and impoundment storage volume. The requirements for structural stability and factor of safety assessments apply to certain CCR surface impoundments,

[33] Demonstration, Appendix E6, Figure 10.
[34] Demonstration, Appendix E6, Figure 5.

but do not apply to any CCR landfills, including the Spurlock Station Landfill and Peg's Hill Landfill. EPA has evaluated the documentation provided by EKPC for the Spurlock Ash Pond and EPA's proposed conclusions are discussed below.

Structural Stability Assessment.

The structural stability assessment provision specified in 40 C.F.R. § 257.73(d) requires an owner or operator of certain impoundments to document whether the design, construction, operation, and maintenance of the impoundment is consistent with recognized and generally accepted good engineering practices. The CCR regulations identify specific features of the impoundment that must be assessed and documented. Specifically, the assessment must address the impoundment's foundations and abutments, slope protection, mechanical compaction of the dike, slope vegetation, spillway construction and capacity, underlying hydraulic structures, and for impoundments located adjacent to a water body, a sudden drawdown assessment. As required, EKPC included the initial structural stability assessment report as part of the Demonstration.[35] EKPC states in the structural stability assessment that the Spurlock Ash Pond meets or exceeds the minimum requirements that was based on a site reconnaissance, a review of historical information, a hydrology analysis, and sudden drawdown slope stability analysis.

EPA reviewed the EKPC's assessment of impoundment's foundations and abutments, slope protection, mechanical compaction of the dike, slope vegetation, spillway construction and capacity, underlying hydraulic structures, and sudden drawdown analysis for the Spurlock Ash Pond. EPA has not identified any deficiencies with the assessment report and has tentatively determined that EKPC has provided adequate documentation showing that the Spurlock Ash Pond meets the applicable requirements.

[35] Demonstration, Appendix C11.

<u>Safety Factor Assessment.</u>

The safety factor assessment provisions specified in 40 C.F.R. § 257.73(e) require an owner or operator of certain impoundments to document whether the calculated factors of safety achieve minimum safety factors for the critical cross section of the embankment. The CCR regulations require evaluation of four load conditions, including: 1) long-term, maximum storage pool; 2) maximum surcharge pool loading condition; 3) seismic; and 4) liquefaction, if the dike is constructed of soils susceptible to liquefaction. As required, EKPC included the initial safety factor assessment report in Appendix C12 of the Demonstration. EKPC explains the analyses performed for the required load conditions and documents that the calculated safety factors achieve the minimum levels specified.

EPA reviewed the analysis methodology, assumptions, and safety factor results presented in the assessment report for the Spurlock Ash Pond. EPA has not identified any deficiencies with the assessment report and is proposing to conclude that EKPC has provided adequate documentation showing that the Spurlock Ash Pond meets the applicable requirements.

IV. EPA's Proposed Action

A. Proposed Conditional Approval.

EPA is proposing to conditionally approve EKPC's extension request based on the preceding discussion, including the proposed findings that the Demonstration fails to demonstrate compliance with several applicable groundwater monitoring requirements and the proposed identification of additional information that EKPC could provide or additional actions EKPC could take to address the identified noncompliance. EPA believes that the additional information and actions are straightforward and that, with appropriate documentation, it will be readily apparent whether the conditions have been met. In addition, the conditions that EPA is

proposing to include require compliance in a short enough time period after the final decision that the conditional approval would not authorize a sustained period of continued operation of a deficient CCR surface impoundment without evidence that the risks were being adequately mitigated. Wherefore EPA is proposing to approve EKPC's alternative deadline of November 30, 2022, provided that the following conditions are met:

1. Within 30 days of the date of EPA's final decision,[36] EKPC shall post on its public CCR website a statement committing to meet all of the conditions to qualify for the conditional approval.
2. No later than five days after the date of EPA's final decision, EKPC shall cease discharging air preheater wash water and boiler non-chemical metal cleaning wastewaters generated during scheduled outage events into the Spurlock Ash Pond.
3. No later than 60 days after the date of EPA's final decision, EKPC shall amend all previously submitted Annual GWMCA Reports by including all groundwater monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3).
4. No later than 60 days after the date of EPA's final decision, EKPC shall submit to EPA a revised plan for the groundwater monitoring systems for the Spurlock Ash Pond, Spurlock Station Landfill and Peg's Hill Landfill that meet the performance standard required by 40 C.F.R. § 257.91. This condition will not be met until EPA approves the revised plan. The plan must ensure the systems address the following items:
    - Characterization of groundwater flow direction around the CCR units, taking into account seasonal or temporal fluctuations and any effects of extraction wells,

[36] The date of EPA's final decision means the date that the decision is signed, not the effective date of the decision.

supported by a sufficient number of groundwater elevation measurements, appropriately located and spaced, to support a determination that the proposed groundwater monitoring systems meet the criteria in 40 C.F.R. § 257.91(a) and (b);

- Identification of wells that characterize background groundwater quality and their locations;
    i. If these are downgradient wells, EKPC shall provide information about samples used to calculate background levels to demonstrate that they meet the performance standard in 40 C.F.R. § 257.91(a)(1)(ii), including when they were obtained, operational status of the CCR unit at that time, and the sampling and analytical results and procedures used;
- Installation of wells at the downgradient waste boundary of the CCR units, with sufficient number and adequate spacing to monitor all potential contaminant pathways, consistent with the performance standard in 40 C.F.R. § 257.91(a)(2) based on criteria in 40 C.F.R. § 257.91(b); and
- P.E. certifications that document how the revised groundwater monitoring systems meet the performance standard in 40 C.F.R. § 257.91.

5. No later than 60 days after the date of EPA's final decision, EKPC shall submit revised sampling and analysis plans for the Spurlock Ash Pond, Spurlock Station Landfill and Peg's Hill Landfill that meet the standard in 40 C.F.R. § 257.93. The sampling and analysis plan for each CCR unit must describe sampling and analytical procedures, including statistical approaches, to be used to collect and analyze groundwater samples.

This condition will not be met until EPA approves the revised plans. The plans must address the following items:

- All information required by 40 C.F.R. § 257.93(a);
- Specific procedures to be followed to comply with requirements in 40 C.F.R. § 257.93(b) through (e), (g), and (h);
- Anticipated quantitation limits based on consultation with the certified laboratory to be used to conduct analyses, in accordance with 40 C.F.R. § 257.93(g)(5), and designation of maximum acceptable quantitation limits which, if exceeded, would require resampling;
- Information about specific statistical procedures to be used (e.g., statistical method selected, performance criteria applied) that documents compliance with 40 C.F.R. § 257.93(f) and (g);
- An accelerated sampling schedule to address the following:
    i. obtain a minimum of eight independent baseline groundwater samples from each new well in accordance with 40 C.F.R. § 257.94(b) as soon as feasible;
    ii. as soon as baseline samples have been obtained, commence assessment monitoring at the Spurlock Ash Pond, in accordance with 40 C.F.R. § 257.95, on an accelerated schedule to offset the failure to complete required assessment monitoring in July 2018 and in January and May 2019;
    iii. as soon as baseline samples have been obtained, commence assessment monitoring at the Spurlock Station Landfill, in accordance with 40 C.F.R.

§ 257.95, on an accelerated schedule to offset the delay in initiating assessment monitoring based on inadequate ASDs; and

- A P.E. certification that the statistical method selected is appropriate for evaluating groundwater monitoring data for the CCR units and includes a narrative description of the statistical method selected, in accordance with 40 C.F.R. § 257.93(f)(6).

6. No later than 60 days after the date of EPA's approval of the revised plan of the groundwater monitoring system at each CCR unit, EKPC shall complete installation of new wells at that unit.
7. No later than 90 days after the date of EPA's approval of both the groundwater monitoring system and the sampling and analysis plan for each CCR unit, EKPC shall sample all wells in the revised groundwater monitoring systems at the Spurlock Ash Pond and the Spurlock Station Landfill in accordance with 40 C.F.R. § 257.95(b)(1), and at the Peg's Hill Landfill in accordance with 40 C.F.R. § 257.94. All groundwater sampling and data analyses shall be conducted in accordance with the requirements of 40 C.F.R. §§ 257.93 through 257.95.

Proposed Procedures.

EPA does not intend that the addition of these conditions establish independently enforceable requirements. Rather, existing statutory and regulatory requirements remain enforceable in accordance with their terms. These added conditions must be met in order for EKPC to obtain, and maintain, approval for an alternative deadline pursuant to 40 C.F.R. § 257.103(f)(1). This means that failure to meet the conditions would result in revocation of the conditional approval, but that failure would not itself be grounds for enforcement action. Instead,

EKPC may be subject to enforcement of the underlying noncompliance upon which the conditions were premised and EKPC would be subject to enforcement for noncompliance if it continued to use the surface impoundment past the new deadline to cease receipt of waste, as well as for any other noncompliance either identified in the final decision or detected apart from this process.

EPA is further proposing that, if EKPC fails to meet any of the conditions in the final decision, the conditional authorization will be automatically revoked and will convert to a denial. In such an event, EPA is proposing that EKPC's deadline would revert to 135 days from the date of EPA's final decision, which is the deadline that would have been established had EPA originally denied the extension request. See Section IV.B.2 of this document for further discussion of the basis for that deadline. In addition, if EPA notifies EKPC that EPA has determined that a submission required under any of the conditions listed above does not meet the relevant performance standards, EPA is proposing that the conditional approval would automatically convert to a denial as of the date of the notification to EKPC. In this case, the new deadline to cease receipt of waste would be 135 days from the date of the notification.

EPA is proposing that EKPC post a notice on its public CCR website within 5 days of meeting each condition. EPA is not proposing to provide an opportunity for notice and comment or to otherwise establish any process to further adjudicate issues relating to EKPC's compliance with the conditions. EPA may approve a submitted plan with or without comments, or may deny the plan outright. In either case EPA does not intend to provide any opportunity for further consultation. EPA will notify EKPC if the Agency determines that a condition has not been met, but has not yet determined the form or timing of the notification. One option that EPA is considering would be to send a letter to EKPC and post a notice on the Agency's website. EPA

requests comment on whether these procedures would be appropriate, and on whether there are alternative mechanisms that would be more appropriate.

Although EPA is proposing a conditional approval, EPA is also taking comment on whether it should deny the extension request on the grounds that it fails to meet the requirements of 40 C.F.R. § 257.103(f)(1)(iv) based on the proposed findings of noncompliance identified in Section III above. EPA is doing so in case EPA determines that the regulations should not be interpreted to allow conditional approvals or EPA determines that circumstances make a conditional approval inappropriate in this case. Such circumstances might include: substantial disagreement about the conditions that would be necessary to come into compliance, EKPC's indication that it is not interested in a conditional approval, or the actions necessary to come into compliance would take longer than the amount of time that would be granted to continue operation of the unit. If EPA determines that a conditional approval is not appropriate under the circumstances, EPA will issue a denial as its final decision.

B. Deadline to Cease Receipt of Waste.

1. Conditional Approval.

EPA is proposing that the EKPC's deadline to cease receipt of waste will be November 30, 2022, provided that EKPC meets all of the conditions described above. If EKPC fails to meet all of the specified conditions, or ceases to comply with any of the conditions, then its conditional approval would automatically convert to a denial. EPA is proposing that in such an event EKPC's deadline to cease receipt of waste would be determined as set forth below for a denial.

2. Denial.

This section proposes the new deadline to cease receipt of waste in the event that EPA's final decision denies EKPC's request for an extension or that EPA issues a conditional approval that converts to a denial.

EPA is proposing that EKPC must cease receipt of waste within 135 days of the date of the Agency's final decision (i.e., the date on which the decision is signed). EPA is further proposing that, under certain circumstances described below, EPA could authorize additional time for EKPC to continue to use the impoundments to the extent necessary to address demonstrated grid reliability issues, if any, provided that EKPC submits a planned outage request to PJM within 15 days of the date of EPA's final decision and EKPC provides the PJM determination disapproving the planned outage and the formal reliability assessment upon which it is based to EPA within 10 days of receiving them.

The regulations state that, when EPA denies an application for an extension, the final decision will include the facility's deadline to cease receipt of waste, but they do not provide direction on what the new deadline should be. 40 C.F.R. § 257.103(f)(3). EPA is proposing to set a new deadline for EKPC to cease receipt of waste that would be 135 days from the date of the final decision on EKPC's Demonstration. This would provide EKPC with the same amount of time that would have been available to the facility had EPA issued a denial immediately upon receipt of the Demonstration (i.e., from November 30, 2020, when EPA received the submission, to April 11, 2021, the regulatory deadline to cease receipt of waste). This amount of time thus puts the facility in the same place it would have been had EPA immediately acted on the Demonstration and therefore adequately accounts for any equitable reliance interest EKPC may have had after submitting its Demonstration. Moreover, as discussed further below, this date should provide EKPC with adequate time to coordinate with and obtain any necessary approvals

from PJM for any outage of the coal-fired boilers that may be necessary. This proposed deadline for EKPC to cease receipt of waste is the same as the proposed effective date of EPA's final decision (*see* Section VI below).

Given that this proposed deadline (135 days from the date of EPA's final decision) is sooner than the deadline requested by EKPC, EPA understands that it is likely that the coal-fired boilers associated with the CCR units will temporarily need to stop producing waste (and therefore power) until either construction of its new disposal option is completed and commercially operational or some other arrangements are made to manage its CCR and/or non-CCR wastestreams. *See* discussion of adverse effects above in Section III.C above. In EKPC's Demonstration, EKPC states that Spurlock provides over 50 percent of the required baseload demand for its customers. Spurlock additionally states that it serves as the connection to PJM, and explains that the loss of Spurlock's four coal-fired boilers would compromise grid stability in the region, Spurlock's connection to PJM, and the production of power for over 1 million rural Kentuckians. EKPC provided no information or evidence to support this statement. EPA does not have independent evidence showing that the temporary outage of the coal-fired boilers at this facility would affect the reliability of the grid.

This facility operates as part of the PJM system, which is the largest competitive market for electric power in the United States. PJM is a regional transmission organization (RTO) that is part of the Eastern Interconnection grid. PJM currently has a significant amount of excess generating capacity, and consequently, a relatively large reserve margin. A reserve margin is a measure of the system's generating capability above the amount required to meet the system's

peak load.[37] PJM's target reserve margin[38] for the region is now 14.7%.[39] PJM's actual reserve margin in 2018 was more than twice that, at 32.8%; in 2019 it was 29%. The anticipated reserve margin for 2021 is projected to be almost 34%.

The significant exceedance of PJM's existing target reserve margin, combined with scheduled new capacity coming online into the market, suggests that the temporary outage at Spurlock would not adversely affect resource adequacy requirements. EPA also has not seen any information to indicate that an extended planned outage at Spurlock would trigger local reliability violations.[40] Additionally, especially with the advance notice, there are a wide array of tools available to utilities, system operators, and state and federal regulators to address situations where the outage of a generating unit might otherwise affect local electric reliability conditions.

Nonetheless, EPA is sensitive to the importance of maintaining enough electricity generating capacity to meet the region's energy needs, including meeting specific, localized issues. EPA understands that it is possible that in some instances temporarily taking generating units (including coal-fired units) offline could have an adverse, localized impact on electric reliability (e.g., voltage support, local resource adequacy), although EKPC has presented no evidence that such is the case with this facility.

If a generating asset were needed for local reliability requirements, the grid operator (e.g., PJM) might not approve a request for a planned outage. In such instances, the owners/operators

---

[37] Reserve margin is defined as the difference between total dependable capacity and annual system peak load (net internal demand) divided by annual system peak load.

[38] The target reserve margin, also known as the Installed Reserve Margin, is "the percent of aggregate generating unit capability above the forecasted peak load that is required for adherence to meet a given adequacy level." Page 52, *https://www.pjm.com/-/media/committees-groups/committees/mc/2020/20201119/20201119-cac-2-2020-installed-reserve-margin-study-results-report.ashx*.

[39] North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 44 (where "Reference" Reserve Margin Level refers to PJM's Installed Reserve Margin), *https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf*.

[40] A local reliability violation might occur, for example, if transmission line constraints limit the amount of power that can get to an area from plants outside that area.

of the generating unit could find themselves in the position of either operating in noncompliance with RCRA or halting operations and thereby potentially causing adverse reliability conditions.

EPA is obligated to ensure compliance with RCRA to protect human health and the environment. Where there is a conflict between timely compliance and electric reliability, EPA intends to carefully exercise its authorities to ensure compliance with RCRA while taking into account any genuine, demonstrated risks to grid reliability identified through the process established by PJM that governs owner/operator requests for planned outages and/or deactivation.[41] Accordingly, EPA is proposing to rely on established processes and authorities used by PJM to determine whether a planned outage necessary to meet the new deadline would cause a demonstrated grid reliability issue.

PJM is responsible for coordinating and approving requests for planned outages of generation and transmission facilities, as necessary, for the reliable operation of the PJM RTO.[42] In PJM, power plants are to submit a request at least 30 days in advance of a planned outage to allow PJM to evaluate whether the resource is needed to maintain grid reliability. PJM will grant the request unless it determines that the planned outage would adversely affect reliability.

If PJM approves a planned outage request, the outage may proceed and there would be no reason to expect that the outage would affect reliability. However, if PJM disapproves a planned outage, the procedure is for the PJM member to submit a new planned outage request for PJM to evaluate (with potential proposals to mitigate previously indicated reliability violations with the prior request). This process is repeated until the generating facility submits an acceptable request. The PJM member may also request PJM's assistance in scheduling a planned outage.

---

[41] *See, e.g.*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at *https://www.pjm.com/~/media/documents/manuals/m10.ashx*.

[42] *See*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at *https://www.pjm.com/~/media/documents/manuals/m10.ashx*.

PJM may rely on different bases in determining whether to deny a request for a planned outage. For example, a denial may be issued because of timing considerations taking into account previously approved planned outage requests, in which case the EPA would expect the plant owner to work with PJM to plan an outage schedule that can be approved by PJM and also satisfies the plant owner's RCRA obligations, without regard to any cost implications (e.g., in meeting any contractual obligations with third parties) that may result for the plant owner under a revised proposed outage schedule.

Alternatively, however, in some cases, PJM might deny a request should it determine that the planned outage could not occur without triggering operational reliability violations. In such cases, the system operator might determine that the generating unit would need to remain in operation until remedies are implemented. As set forth above, EKPC has presented no evidence that such is the case with this facility.

For Spurlock, EPA is proposing to rely on PJM's procedures for reviewing planned maintenance outage and similar requests. Accordingly, EPA is proposing that, if PJM approves EKPC's planned outage request, EPA would not grant any further extension of the deadline to cease receipt of waste (i.e., the deadline would be 135 days from the date of EPA's final decision). If, however, PJM disapproves EKPC's planned outage request based on a technical demonstration of operational reliability issues, EPA is proposing that, based on its review of that disapproval and its bases, EPA could grant a further extension (i.e., beyond 135 days from the date of EPA's final decision). EPA is further proposing that such a request could only be granted if it were supported by the results of the formal reliability assessment(s) conducted by PJM that established that the temporary outage of the boiler during the period needed to complete construction of alternative disposal capacity would have an adverse impact on reliability. In such

a case EPA is proposing that, without additional notice and comment, it could authorize continued use of the impoundments for either the amount of time provided in an alternative schedule proposed by PJM or the amount of time EPA determines is needed to complete construction of alternative disposal capacity based on its review of the Demonstration, whichever is shorter. EPA is further proposing that a disapproval from PJM without a finding of technical infeasibility for demonstrated reliability concerns would not support EPA's approval of an extension of the date to cease receipt of waste because any concern about outage schedules and their implications for plant economics could be resolved without an extension of RCRA compliance deadlines (e.g., through provision of replacement power and/or capacity; rearranging plant maintenance schedules; reconfiguration of equipment).

To obtain an extension, EPA is proposing that EKPC must submit a request for an outage to PJM within 15 days of the date of EPA's final decision. To avoid the need for serial requests and submissions to PJM, EPA is proposing to require EKPC to contact PJM and request assistance in scheduling the planned outage so that EKPC and PJM can determine the shortest period of time during an overall planned outage period in which the generating unit must be online to avoid a reliability violation. EPA expects that EKPC and PJM would plan the outage(s) and return-to-service periods—and any other needed accommodations—in ways that minimize the period of actual plant operations.

Finally, to obtain an extension from EPA, EKPC must submit a copy of the request to PJM and the PJM determination (including the formal reliability assessment) to EPA within 10 days of receiving the response from PJM. EPA would review the request and, without further notice and comment, issue a decision.

One hundred and thirty-five days should normally provide adequate time to obtain a decision from PJM. According to the PJM Manual 10 (at page 17), the normal process for obtaining approval for a planned outage is 30 days. 135 days should also provide sufficient time to accommodate multiple requests, if necessary, to obtain approval. However, EPA solicits comment on whether 135 days from the date of the final decision provides sufficient time to accommodate the normal process of obtaining approval for a planned outage.

V. Conclusion

EPA is proposing to conditionally approve the extension request in the Demonstration submitted by East Kentucky Power Cooperative for the Spurlock Ash Pond at the Spurlock Power Station. If EPA's final action is a disapproval, EKPC must cease receiving waste within 135 days of EPA's decision. If EPA determines that circumstances warrant a conditional approval, as described above, and EKPC provides appropriate commitments in response to this proposal that it is interested in accepting a conditional approval, EPA is proposing to condition this approval on EKPC timely taking those actions specified in Section IV.A of this proposed decision. If finalized, a conditional approval would allow EKPC to continue placing the following CCR and non-CCR wastestreams in the Spurlock Ash Pond through November 30, 2022: flue gas desulfurization wastestreams (CCR), clarifier sludge (non-CCR), activated carbon filter backwash (non-CCR), demineralizer regeneration flows (non-CCR), and coal pile runoff and site stormwater runoff (non-CCR). If at any time EKPC fails to comply (or ceases compliance with) any of the conditions, the proposed conditional approval would terminate and revert to a denial. In such a case the deadline to cease receipt of waste would be as discussed in Section IV.B.1 above.

VI. Effective Date

EPA is proposing to establish an effective date for the final decision on EKPC's application of 135 days after the date the final decision is signed. EPA is proposing to align the effective date with the new deadline that EPA is proposing to establish for EKPC to cease receipt of waste. EPA is doing so for all of the reasons discussed as the basis for proposing to establish the new cease receipt of waste discussed in Section IV of this document.

January 11, 2022
Date

Barry N. Breen
Acting Assistant Administrator